P.O. 060552-

REPORT NUMBER: 201C-VER-03-05

SAFETY COMPLIANCE TESTING FOR FMVSS 201 OCCUPANT PROTECTION IN INTERIOR IMPACT UPPER INTERIOR HEAD IMPACT PROTECTION

DIAMLER CHRYSLER CORPORATION 2003 CHRYSLER PT CRUISER 4-DOOR

NHTSA NUMBER: C30303

VERIDIAN TEST NUMBER: 8653-FMH-10

VERIDIAN ENGINEERING
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225

Date: February 12,2003

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance
Mail Code: NVS-220, Room 6111
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Washington, DC 20590

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Approval Date: May 15, 2003

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_____

Accepted By

6.16.2003

Date of Report Acceptance

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16. *Abstract* Compliance tests were conducted on the subject vehicle, a 2003 Chrysler PT Cruiser 4-door, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure TP-201U-01 for determination of FMVSS 201 compliance. Test failures identified were as follows: None		
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SECTION 1

PURPOSE AND TEST PROCEDURE

This head impact compliance test is part of the FMVSS 201 Upper Interior Head Impact Protection Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-99-C-01005. The purpose of this head impact compliance test was to determine whether the subject vehicle, 2003 Chrysler PT Cruiser 4-door, NHTSA No. C30303, meets the performance requirements of FMVSS 201, Occupant Protection in Interior Impact. The compliance test was conducted using the requirements found in the OVSC Laboratory Test Procedure No. TP-201U-01 dated April 3, 1998.

SECTION 2

SUMMARY OF UPPER INTERIOR HEAD IMPACTS

A 2003 Chrysler PT Cruiser 4-door, NHTSA No. C30303, was impacted at various locations throughout its upper interior by a 4.54 kg 50th percentile headform. A total of ten (10) impacts were performed in this test series. The target area impacts were chosen by the NHTSA Contracting Officer's Technical Representative. A summary of test results can be found on data sheet 2-1. The ten (10) area chosen for testing were:

AP1	BP1	SR1	LR	RP1
AP2	BP2			RP2
AP3	BP4			

The selected impact areas on the test vehicle appeared to comply with the upper interior performance requirements of FMVSS 201.

Five Free Motion Headforms (FMH), were used in this test series. All five FMH's were calibrated prior to and after the test series. Calibration information are included in Appendix B. Each FMH weighed 4.54 ± 0.5 kg. and had orthogonal tri-axis accelerometer pack mounted at the center of gravity (c.g.).

A total of three (3) channels of data for each target impact test was recorded on a Keyser Threde data acquisition system. Data plots, along with still photographs, can be found in Section 3 of this report.

To document each target area impact test, one Kodak Ektapro high speed video camera was used to record the headform contact with the selected target area.

DATA SHEET 2-1

SUMMARY OF UPPER INTERIOR HEAD IMPACT TESTS

Year/Make/Model/Body Style: 2003 Chrysler PT Cruiser 4-door

Vehicle Body Color: White VIN: 3C4FY48B73T544020

Vehicle NHTSA No.: C30303 Month & Year of Manufacture: 09/02

Test No.	Target				Approach Angles (degrees)		Velocity (kph)	FMH HIC	HIC(d)*
	Code	X (mm)	Y (mm)	Z (mm)	Horizontal	Vertical			
1	BP4	2867	625	1093	125	-9	23.43	952.1	884.7
2	BP1	2844	432	1418	90	27	23.49	731.0	717.9
3	RP2	3996	-531	1232	43	7	23.56	751.0	733.4
4	AP2	2203	576	1249	150	36	23.89	679.1	678.8
5	SR1	2442	480	1403	90	37	23.62	538.5	572.7
6	AP3	2114	-595	1177	203	35	23.47	386.0	457.7
7	AP1	2288	-498	1329	212	26	23.45	523.9	561.6
8	BP2	2827	-548	1168	270	5	23.55	623.6	636.8
9	URBP	2842	-372	1463	270	31	23.33	520.1	558.8
10	RP1	3781	-457	1369	315	33	23.41	489.8	535.9

Note : Origin of coordinate system is the front center of the vehicle bumper using Daimler's reference coordinate (front outboard seatbelt hole : x=2341.29mm , y=512.89mm , z=252.55mm)

*HIC(d)=0.75446(Free Motion Headform HIC)+166.4

DATA SHEET 2-2

TEST RESULTS SUMMARY TABLE

Year/Make/Model/Body Style: 2003 Chrysler PT Cruiser 4-door

Vehicle Body Color: White VIN. 3C4FY48B73T544020

Vehicle NHTSA No.: C30303 Month & Year of Manufacture: 09/02

	Target (mm)			Horizontal Impact angle	Vertical Impact Angle	Velocity (KPH)	FMH-HIC	HICd:
	X	Y	Z					
A-PILLAR DRIVER SIDE								
AP1	2288	-498	1329	212	26	23.45	523.9	561.6
AP2	2199	-570	1243	-	-	-	-	-
AP3	2114	-595	1177	203	35	22.47	386.0	457.7
A-PILLAR PASSENGER SIDE								
AP1	2292	504	1337	-		-	-	-
AP2	2203	576	1249	150	36	23.89	679.1	678.8
AP3	2121	601	1180	-	-	-	-	-
B-PILLAR DRIVER SIDE								
BP1	2840	-437	1415		-	-	-	-
BP2	2827	-548	1158	270	5	23.55	623.6	636.8
BP3	2802	-578	1201	R=2		-		-
Rel. BP3	2789	-576	1155	-	-	-	-	-
BP4	2861	-627	1087	-	-	-	-	-
B-PILLAR PASSENGER SIDE								
BP1	2844	432	1418	90	27	23.49	731.0	717.9
BP2	2823	551	1175	-	-	-	-	-
BP3	2804	574	1199	R=2		-	-	-
Rel. BP3	2791	574	1159	-	-	-	-	-
BP4	2867	625	1093	125	9	23.43	952.1	884.7
OTHER PILLARS DRIVER SIDE								
OP1	3652	-572	1202	-	-	-	-	-
OP2	3658	-593	1250	R=2		-		-
Rel. OP2	3654	-573	1223	-	-	-	-	-
OTHER PILLARS PASSENGER SIDE								
OP1	3653	570	1197	-	-	-		
OP2	3657	591	1253	R=2			-	-
Rel. OP2	3655	573	1225	-	-	-	-	-

Note R=1 - Relocated once (one sphere) R=2 - Relocated twice (two spheres)

	Target (mm)			Horizontal Impact angle	Vertical Impact Angle	Velocity (KPH)	FMH-HIC	HIC(d)
	X	Y	Z					
FRONT HEADER DRIVER SIDE								
FH1	2221	-399	1365	-	-	-	-	-
FH2	2193	-253	1379	-	-	-	-	-
FRONT HEADER PASSENGER SIDE								
FH1	2223	397	1368	-	-	-	-	-
FH2	2190	254	1378	-	-	-	-	-
SIDE RAIL DRIVER SIDE								
SR1	2438	-479	1403	-	-	-	-	-
SR2A	2588	-477	1430	-	-	-	-	-
SR2B	2540	-476	1431	-	-	-	-	-
SR3	2987	-446	1437	-	-	-	-	-
SIDE RAIL PASSENGER SIDE								
SR1	2442	480	1403	90	37	23.62	538.5	572.7
SR2A	2592	477	1428	-		-		-
SR2B	2544	477	1432	-	-	-	-	-
SR3	2993	446	1441	-	-	-	-	-
UPPER ROOF DRIVER SIDE								
URBP	2842	-372	1463	270	31	23.33	520.1	558.8
UPPER ROOF PASSENGER SIDE								
URBP	2846	376	1567	-	-	-	-	-
REAR PILLAR DRIVER SIDE								
RP1	3781	-457	1369	315	33	23.41	489.8	535.9
RP2	3983	-538	1217	R=1		-	-	-
Rel. RP2	3993	-530	1223	-	-	-	-	-
REAR PILLAR PASSENGER SIDE								
RP1	3777	456	1374	-			-	
RP2	3988	538	1224	R=1		-	-	-
Rel. RP2	3996	-531	1232	43	7	23.56	751.0	733.4

Note R=1 - Relocated once (one sphere) R=2 - Relocated twice (two spheres)

DATA SHEET 2-3

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2003 Chrysler PT Cruiser 4-door

Vehicle Body Color: White VIN: 3C4FY48B73T544020

Vehicle NHTSA No.: C30303 Month & Year of Manufacture: 09/02

Engine Data: 4 Cylinders; - CID; 2.4 Liters; - cc

Engine Placement: x Longitudinal; or - Lateral

Transmission: 5 Speed; x Manual; x Automatic; - Overdrive

Final Drive: - Rear Wheel Drive; x Front Wheel Drive; - Four Wheel

Odometer Reading 46 km

Options: x A/C; x Power Steering; x Pwr.Brakes; x Pwr. Windows

Interior Trim Information :

Adjustable seat belt anchorages located on both B-pillars.
Non-adjustable seat belt anchorages located on both Other Pillars.

DATA FROM TIRE PLACARD

Tire Pressure (at capacity); 240 kPa FRONT

240 kPa REAR

Recommended Tire Size: P195/65R15

Tires on Test Vehicle: P195/65R15 ; Manufacturer: Goodyear

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear; - 3rd Seat; 5 Total

Type of Front Seats: x Bucket; - Bench; - Split Bench

Type of Front Seat Back: - Fixed, x Adjustable with x Lever or - Knob

Vehicle Capacity Weight (VCW)= 392 kg (A)

No. of Occupants x 68 kg. = 340 kg (B)

Rated Cargo/Luggage Weight (RCLW) = 52 kg (A-B) Max. RCLW 136 kg.

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front	=	409 kg	Left Rear	=	291 kg
Right Front		419 kg	Right Rear	=	296 kg
TOTAL FRONT	=	828.0 kg	TOTAL REAR	=	587.0 kg
% of Total Weight	=	58.5 %	% of Total Weight	=	41.5 %
TOTAL WEIGHT	=	1415.0 kg			

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight		1415.0 kg
– Rated Cargo/Luggage Weight	=	52.0 kg
TEST VEHICLE TARGET WEIGHT:	=	1467.0 kg

WEIGHT OF TEST VEHICLE (FULLY LOADED):

Left Front	= 404 kg		Left Rear	= 321	kg
Right Front	= 412 kg		Right Rear	= 325	kg
TOTAL FRONT	= 816.0 kg		TOTAL REAR	= 646.0	kg
% of Total Weight	= 55.8 %		% of Total Weight	= 44.2	%

TOTAL TEST WEIGHT 1462.0 kg

Weight of vehicle secured in test vehicle's cargo area = 52 kg.

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED:

Left Front 714 Right Front 711 Left Rear 736 Right Rear 736

FULLY LOADED:

Left Front 714 Right Front 712 Left Rear 722 Right Rear 723

Test Vehicle Wheelbase: 2615 millimeters

TEST VEHICLE PITCH AND ROLL ANGLES:

AS DELIVERED:

PITCH ANGLES			ROLL ANGLES		
Left Door Sill	1.8 °	Right Door Sill 2.1 °	Front Bumper	0.1 °	Rear Bumper 0.2 °

FULLY LOADED:

PITCH ANGLES			ROLL ANGLES		
Left Door Sill	1.4 °	Right Door Sill 1.8 °	Front Bumper	0.0 °	Rear Bumper 0.1 °

AS TESTED:

PITCH ANGLES			ROLL ANGLES		
Left Door Sill	1.6 °	Right Door Sill 1.9 °	Front Bumper	0.1 °	Rear Bumper 0.1 °

DATA SHEET 2-4
TARGET MEASUREMENT REFERENCE SHEET

Year/Make/Model/Body Style: 2003 Chrysler PT Cruiser 4-door

Vehicle Body Color: White **VIN:** 3C4FY48B73T544020

Vehicle NHTSA No.: C30303 Month & Year of Manufacture: 09/02

Measurements	Description	Left Side	Right Side
M	Seat fore / Aft travel (Front seats)	228	228
T°	Horizontal angle {CG-F1 (Left seat) to (Right A-pillar)}	160	-
A1°	360° - T°	200	-
W°	Horizontal angle {CG-F2 (Left seat) to (Left A-pillar)}	249	-
A2°	A2° = W°	249	-
U°	Horizontal angle {CG-F2 (Left seat) to (Left B-pillar)}	278	-
B1°	B1° = U°	278	-
V°	Horizontal angle {CG-FR (Left seat) to (Right B-pillar)}	196	-
B2°	B2° = V°	196	-
W°	Horizontal angle {CG-F2 (Right seat) to (Right A-pillar)}	-	159
A1°	A1° (Right) = W° (Right)	-	159
T°	Horizontal angle {CG-F1 (Right seat) to (Left A-pillar)}	-	249
A2°	360° - T°(Right)	-	111
V°	Horizontal angle {CG-FR (Right seat) to (Right B-pillar)}	-	163
B1°	B1° (Right) = V° (Right)	-	163
U°	Horizontal angle {CG-F2 (Right seat) to (Right B-pillar)}	-	82
B2°	B2° (Right) = U° (Right)	-	82
J	A-pillar {(Plane 3) - (Plane 5)}	320	320
J/2	J ÷ 2	160	160
D1	Upper Roof {(Plane A) - (Plane B)}	1840	
D1/2	D1 ÷ 2	920	
D2	Upper Roof {(Plane C) - (Plane D)}	1158	
D2/2	D2 ÷ 2	579	
.35D1	.35 x D1	644	
.35D2	.35 x D2	405	
N	B-pillar {(BP8) - (lowest point on the daylight opening forward of B-pillar)}	432	432
N/2	B-pillar {(BP3) - (lowest point on the daylight opening forward of B-pillar)}	216	216

Measurement	Description	Left Side	Right Side
N/4	B-pillar {(BP3) - (lowest point on the daylight opening forward of B-pillar)}	108	108
Q	Other-pillar {(OPR) - (lowest point on the daylight opening forward of O-pillar)}	432	430
Q/2	Other-pillar {(OP2) - (lowest point on the daylight opening forward of O-pillar)}	216	215
D	{(Corner of roof area, point 7) - (roof area center, point M)}	780	778
3D/7	(3 x D) ÷7	334	333
MM	Widest door opening of slider door	-	-
M	MM ÷ 2	-	-

DATA SHEET 2-5

APPROACH ANGLE LIMITS

Left Side					Right Side				
Target Code	Horizontal Angles (deg.)		Vertical Angles (deg.)		Target Code	Horizontal Angles (deg.)		Vertical Angles (deg.)	
	Minimum	Maximum	Minimum	Maximum		Minimum	Maximum	Minimum	Maximum
AP1	200	249	-5	27	AP1	111	159	-5	33
AP2	200	249	-5	35	AP2	111	159	-5	36
AP3	200	249	-5	35	AP3	111	159	-5	36
BP1	196	278	-10	26	BP1	82	163	-10	27
BP2	ANY		0	5	BP2	ANY		0	5
BP3	196	278	-10	-10	BP3	82	163	-10	-9
BP4	196	278	-10	-9	BP4	82	163	-10	-9
OP1	ANY		0	-3	OP1	ANY		0	2
OP2	270		-18	-2	OP2	90		-10	-3
RP1	270	345	10	35	RP1	15	90	-10	35
RP2	270	345	-10	7	RP2	-5	90	-10	9
FH1	180		0	50	FH1	180		0	50
FH2	180		0	50	FH2	180		0	50
RH	360		0	50	RH1	0		0	50
SR1	270		0	36	SR1	90		0	37
SR2A	270		0	41	SR2A	90		0	42
SR2B	270		0	41	SR2B	90		0	41
SR3	270		0	41	SR3	90		0	41
SD	270		0	-	SD	90		0	-
URBP	ANY		0	31	URBP	ANY		0	31

Note : BP2 and OP1 target location - Seat Belt anchorage

DATA SHEET 2-6

POST-TEST VISUAL INSPECTION

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

REMARKS:

1. No visual damage to the vehicle interior.

DATA SHEET 2-7

TARGET IMPACT LOCATION ON FMII SUMMARY

Year/Make/Model/Body Style: 2003 Chrysler PT Cruiser 4-door

Vehicle Body Color: White VIN: 3C4FY48B73T544020

Vehicle NHTSA No.. C30303 Month & Year of Manufacture: 09/02

← RIGHT SIDE OF FACE

TARGET	Distance Above Pt. O (mm)	Distance Over From Pt. O (mm)
BPa	7	37 to the left
BP1	22	6 to the right
RP2	19	7 to the right
AP2	31	0
SR1	18	4 to the left
AP3	15	10 to the left
AP1	19	24 to the left
BP2	15	9 to the left
URBP	33	13 to the left
RP1	30	4 to the right

SECTION 3

SUMMARY OF TEST RESULTS AND DATA PLOTS

TEST SUMMARY SHEET FOR FMVSS 201/U TESTING

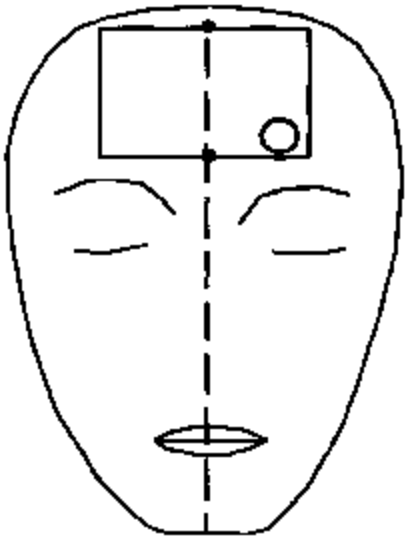
Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	1	Test Date:	2/11/03
Target Location:	B-pillar	Target Code:	BP4
Horizontal Impact Angle:	125 °	Vertical Impact Angle:	-9 °
Ambient Temperature:	20 °C	Time of Impact:	11:00
Headform Number:	0062		

Impact Point:

Description:

Description:	From lower midpoint				
On centerline	7	mm up			
On centerline	37	-	mm right	x	mm left



Free Motion HIC:	952.1	HIC(d):	884.7
Impact Velocity (kph):	23.43	HICT1	5.1 msec HICT2 8.4 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - BP4

FMH Headform 0062

Location: BP4

Test Date: February 11, 2003

Work File: BP4

----------TEST RESULTS----------

Lab Temperature: 20 C

Lab Humidity: 13 %

Velocity at Impact: 23.43 KPH

Free Flight Distance:209.60 mm

HICd: 884.7

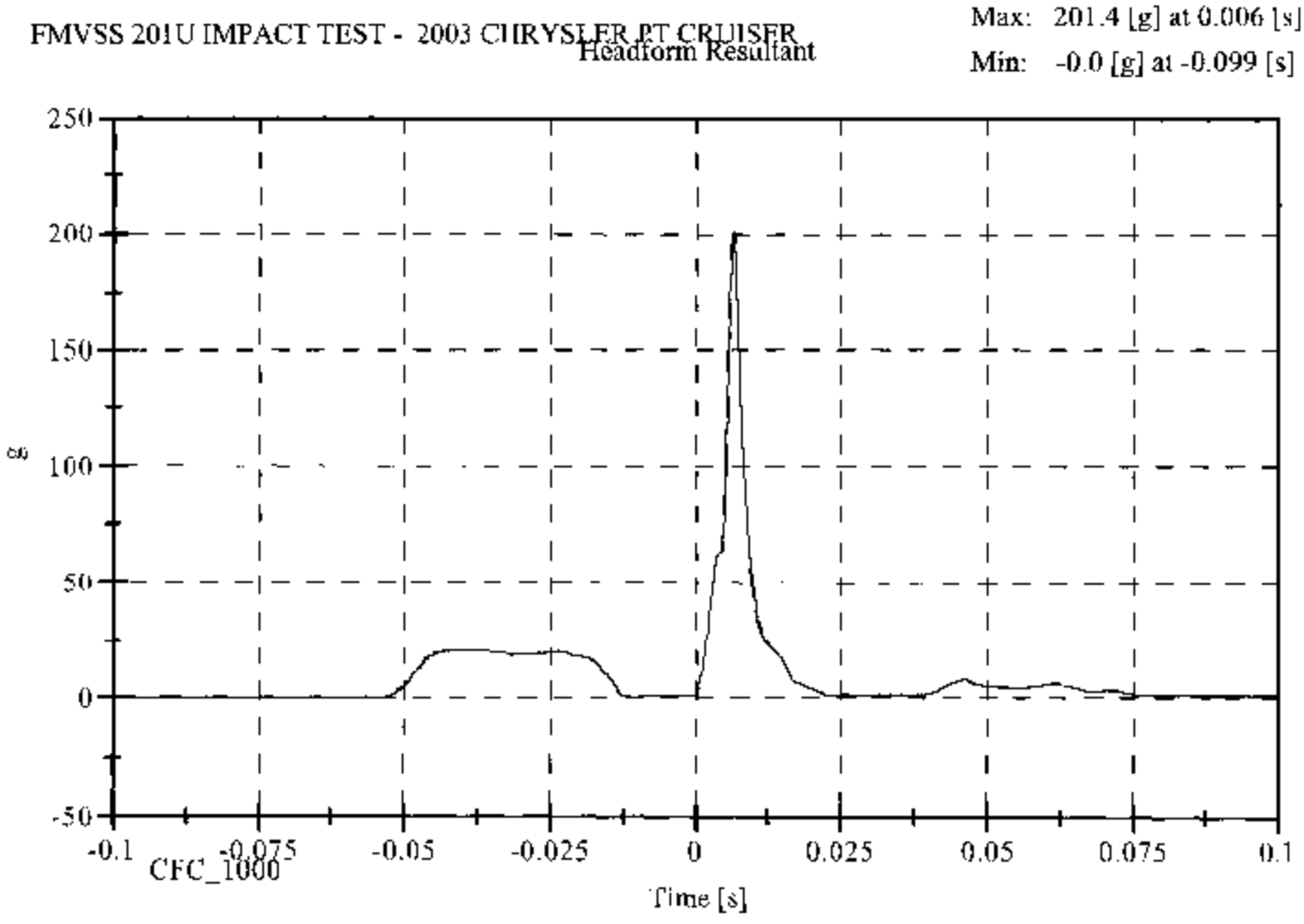
HIC (36ms): 952.1

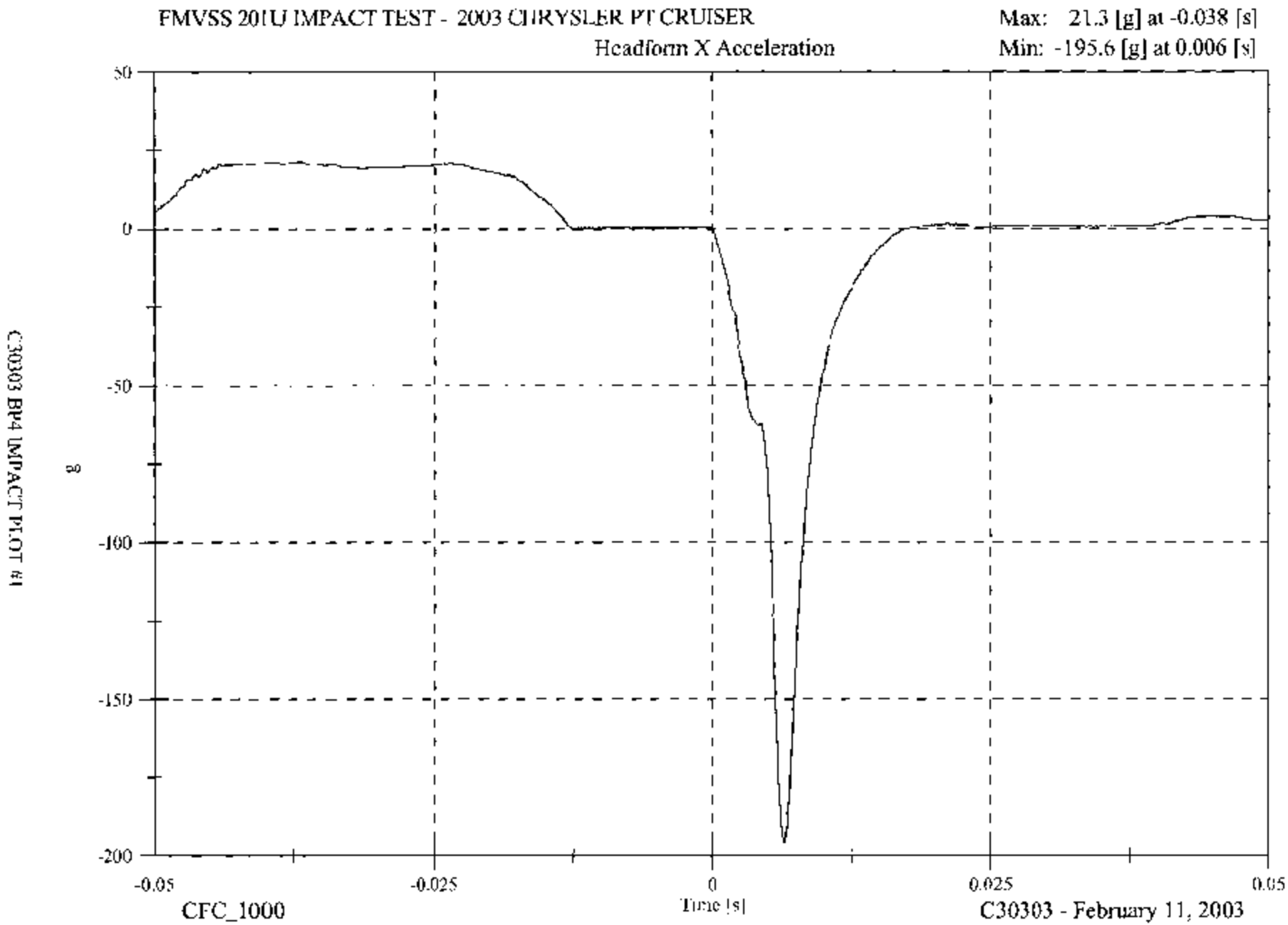
t1: 5.1 msec

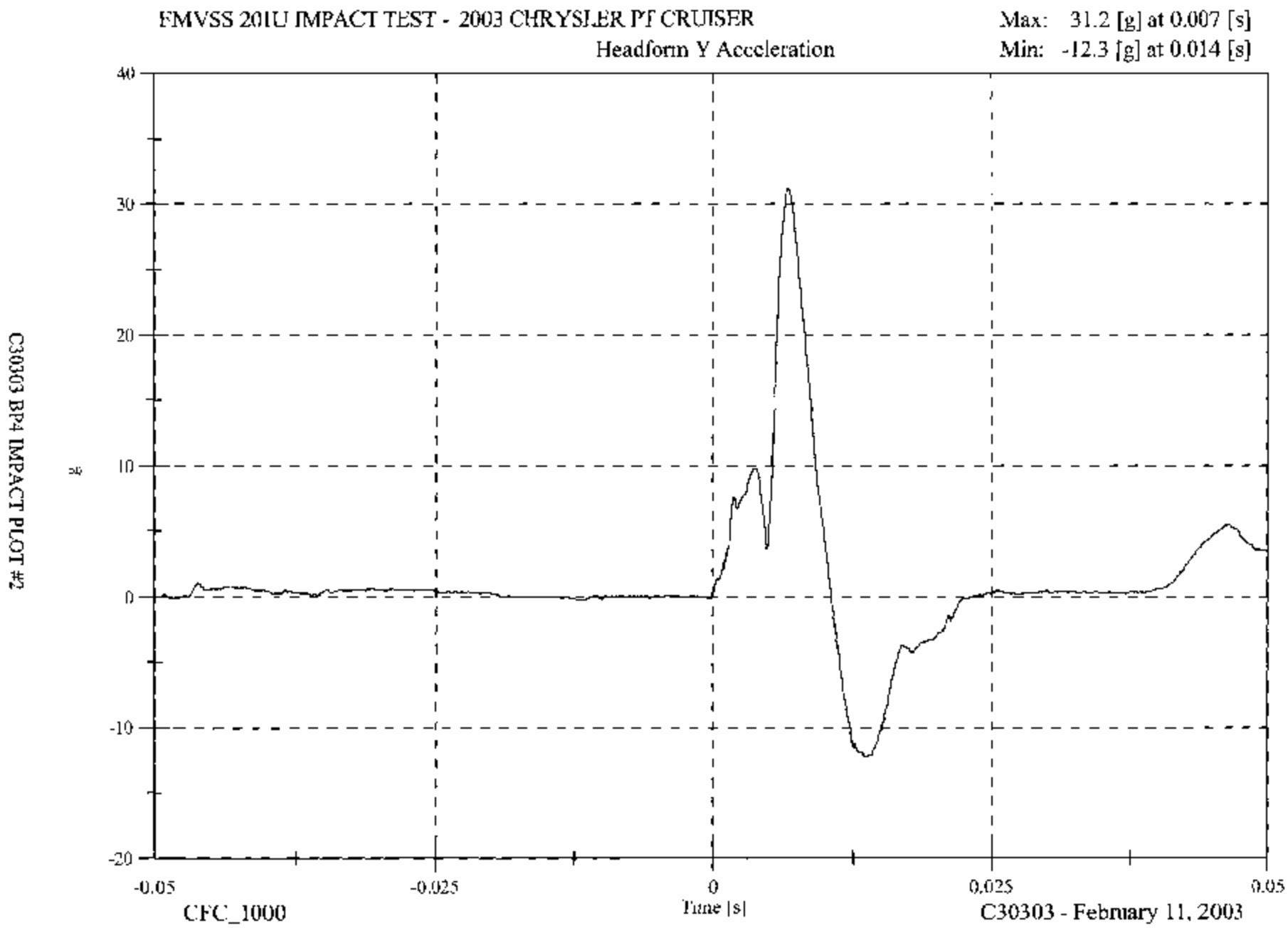
t2: 8.4 msec

Duration: 3.3 msec

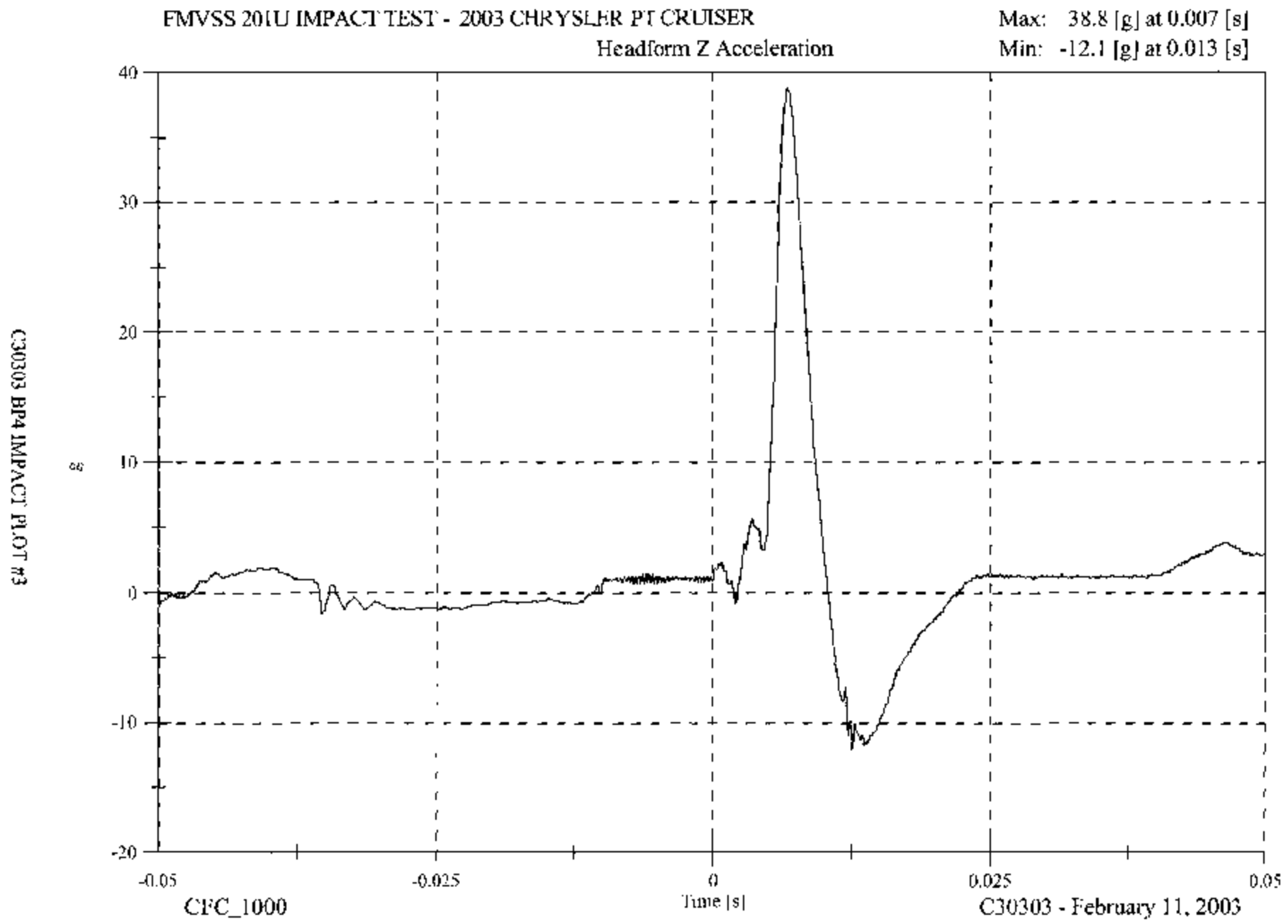
Average Acceleration: 9.4 g



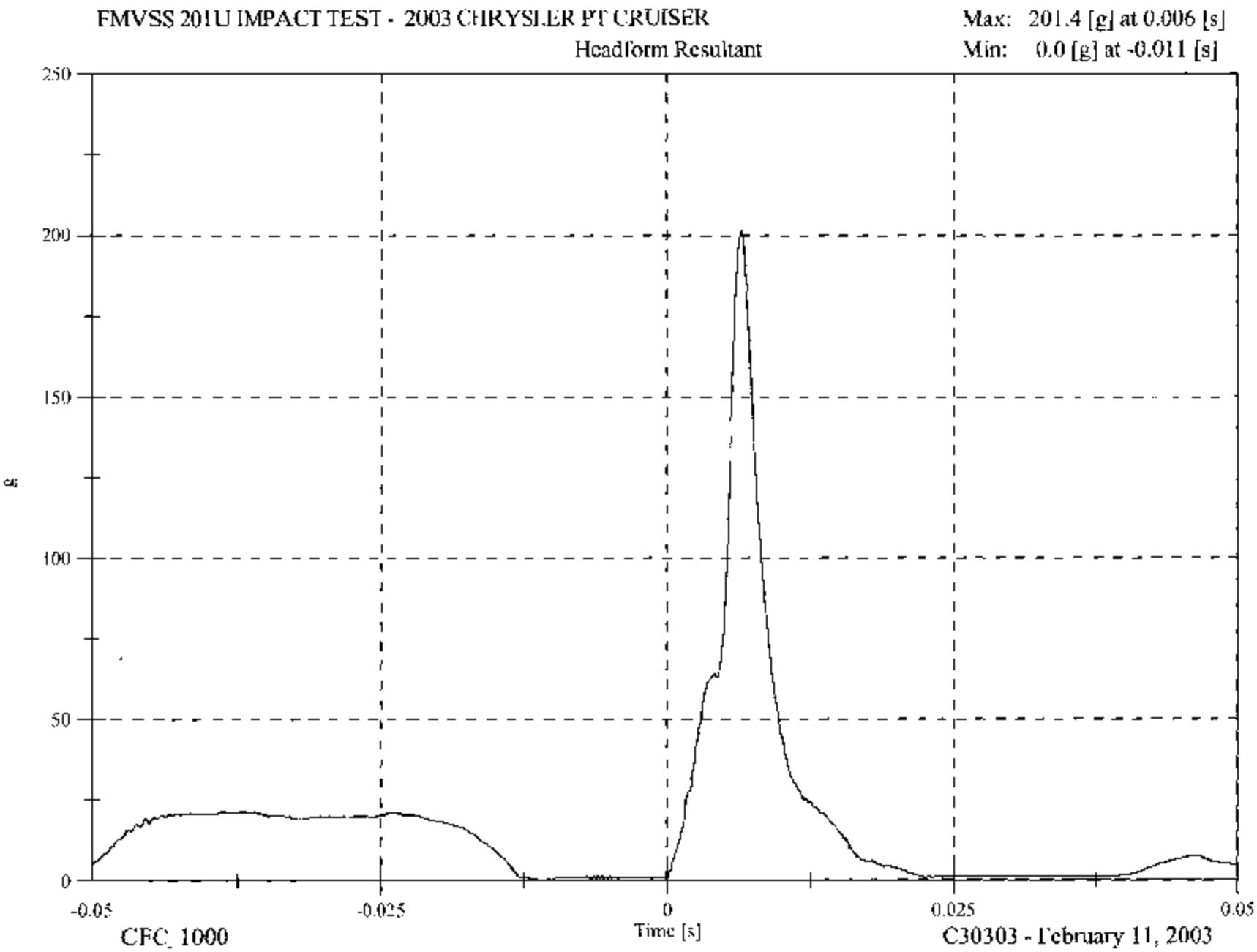

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform X Acceleration
Max: 21.3 [g] at -0.038 [s]
Min: -195.6 [g] at 0.006 [s]
50
0
-50
-100
-150
-200
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003
C30303 BP4 IMPACT PLOT #1

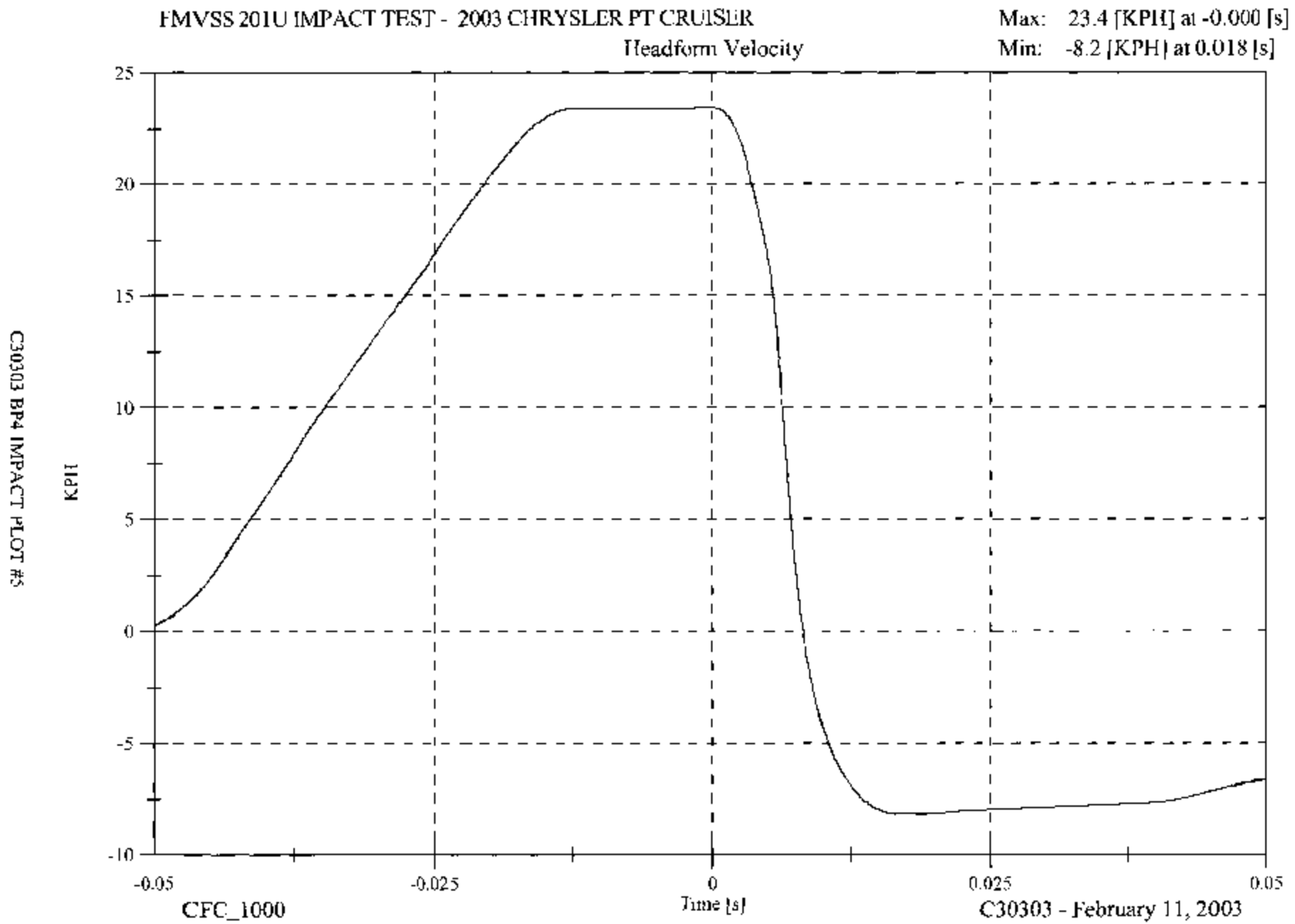


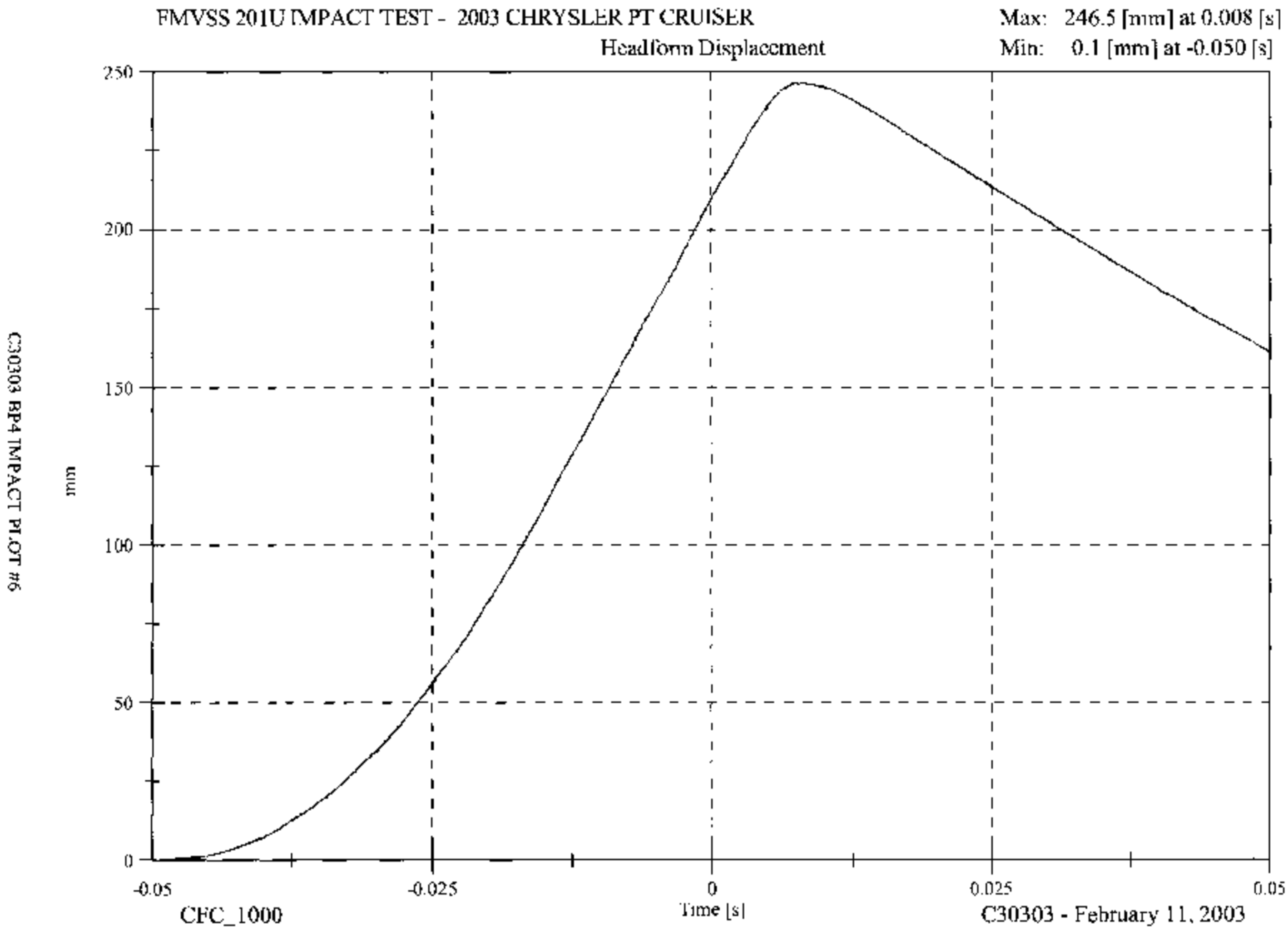
C30303 BP4 IMPACT PLOT #2


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Z Acceleration
Max: 38.8 [g] at 0.007 [s]
Min: -12.1 [g] at 0.013 [s]
40
30
20
10
0
-10
-20
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003
C30303 BP4 IMPACT PLOT #3

C30303 BP4 IMPACT PLOT #4




FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Velocity
Max: 23.4 [KPH] at -0.000 [s]
Min: -8.2 [KPH] at 0.018 [s]
KPH
25
20
15
10
5
0
-5
-10
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003
C30303 BP4 IMPACT PLOT #5



C30303 BP4 IMPACT PLOT #6

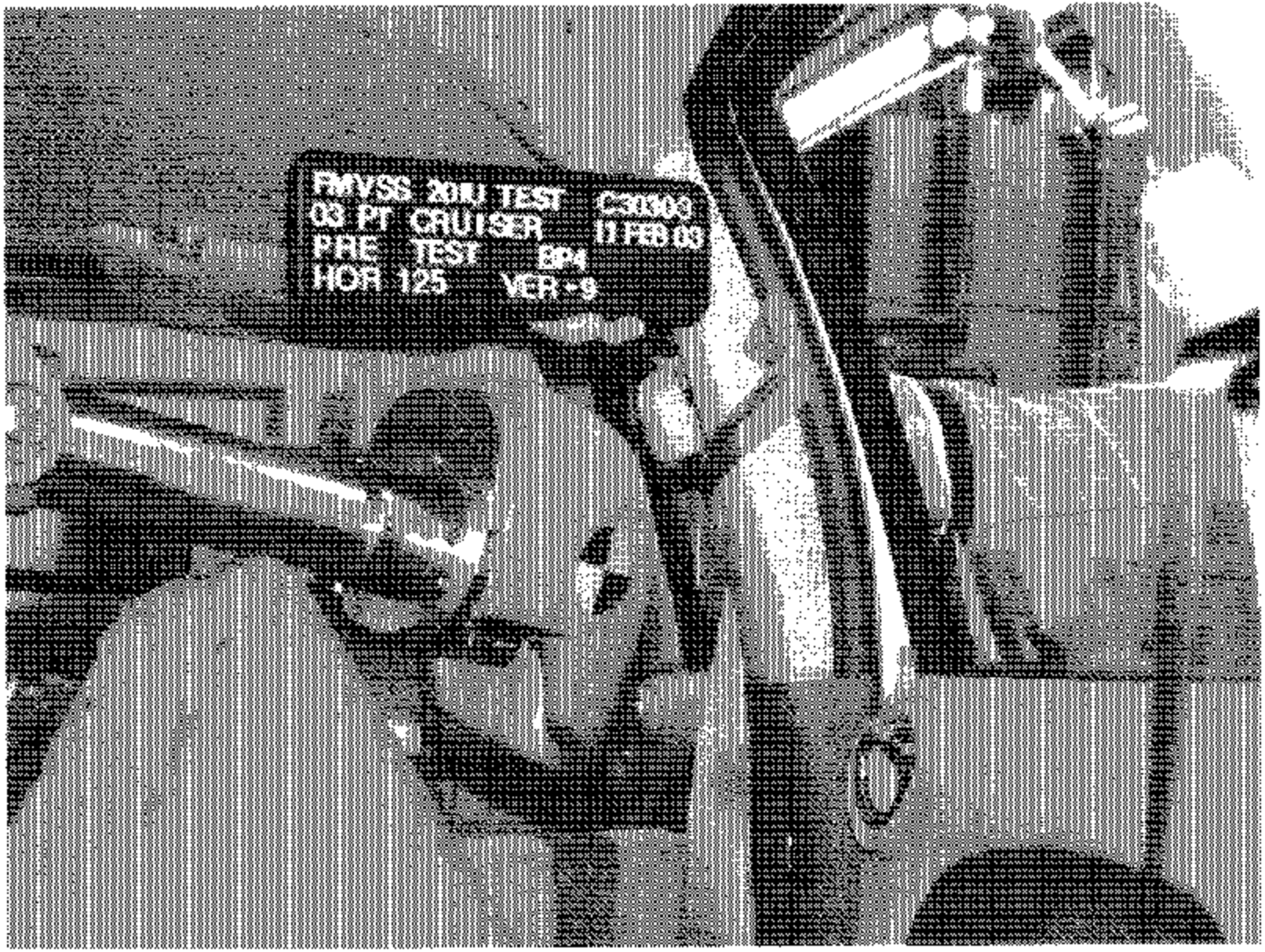


Figure : PRE-TEST BP4

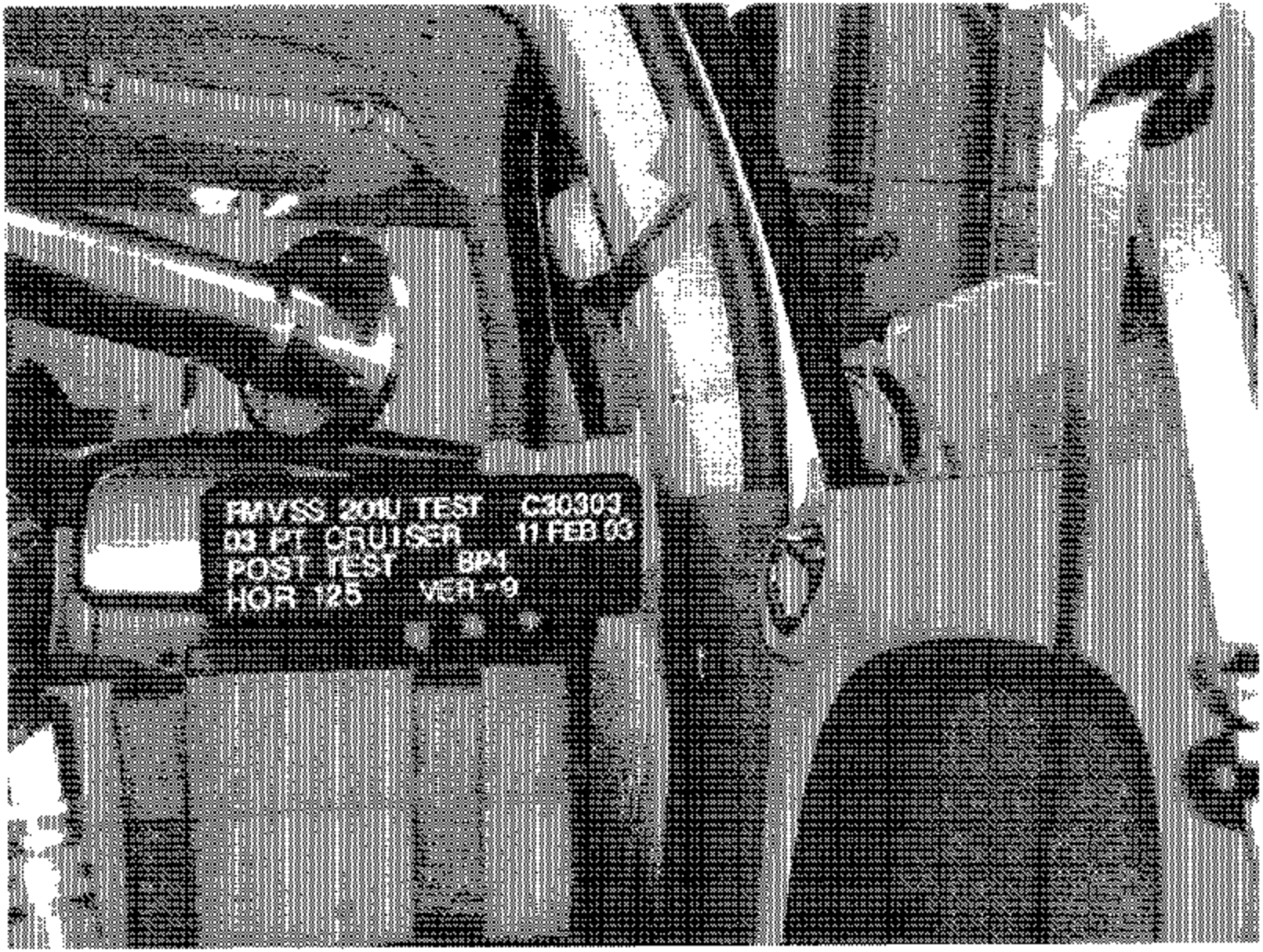


Figure : POST-TEST BP4

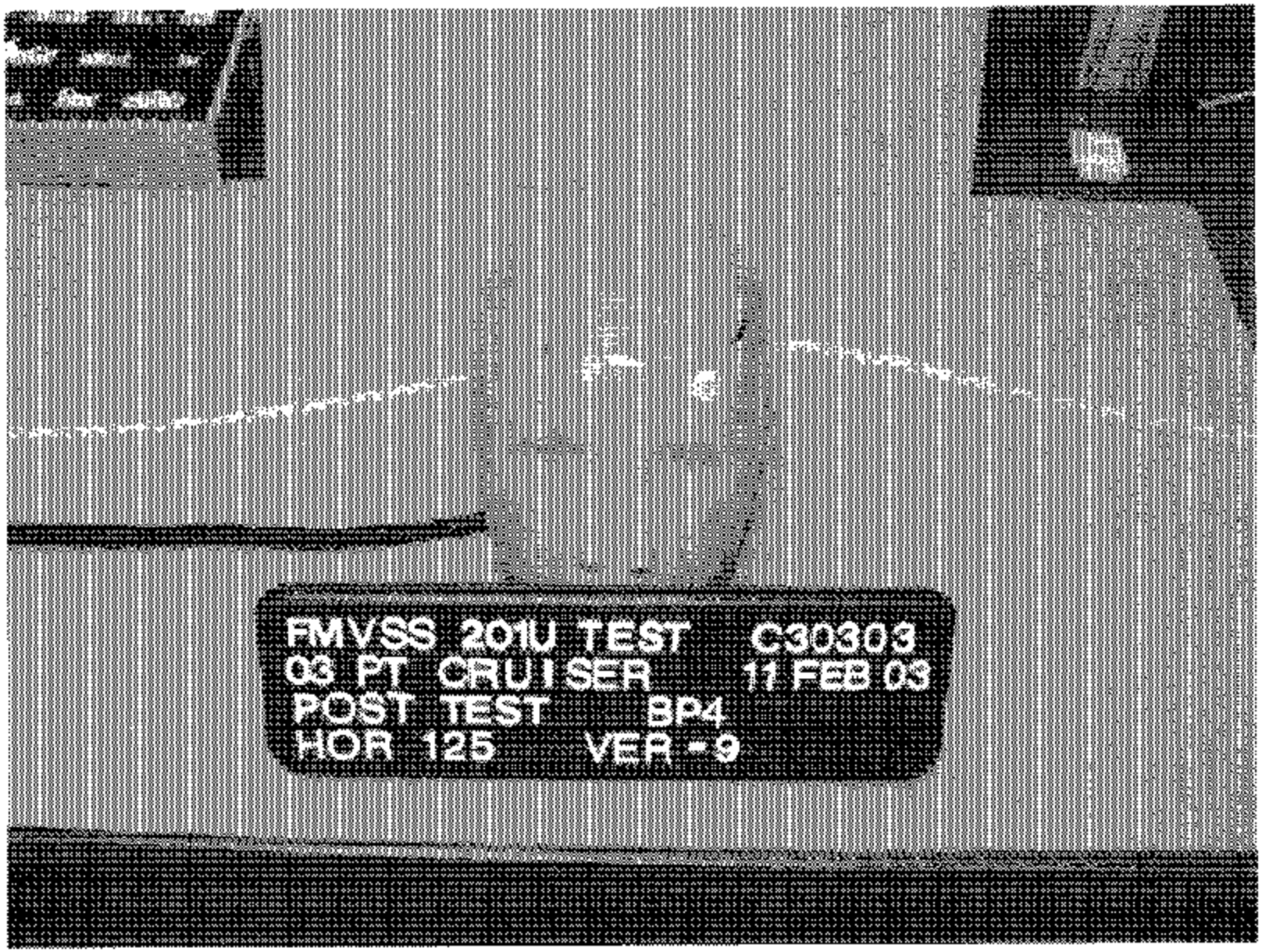


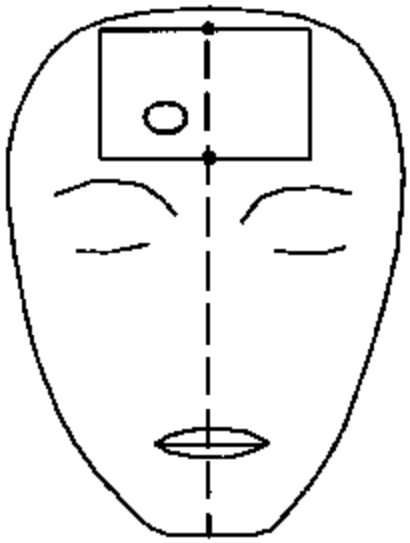
Figure : BP4 HEADFORM

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	2	Test Date:	2/11/03
Target Location:	B-pillar	Target Code:	BP1
Horizontal Impact Angle:	90 °	Vertical Impact Angle:	27 °
Ambient Temperature:	20 °C	Time of Impact:	11:45
Headform Number:	1255		

Impact Point:
Description:

Description:	From lower midpoint				
On centerline	22	mm up			
On centerline	6	x	mm right	-	mm left



Free Motion HIC:	731.0	HIC(d):	717.9		
Impact Velocity (kph):	23.49	HICT1	4.1 msec	HICT2	11.2 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - BP1

FMH Headform 1255

Location: BP1

Test Date: February 11, 2003

Work File: BP1

----------TEST RESULTS----------

Lab Temperature: 20 C

Lab Humidity: 13 %

Velocity at Impact: 23.49 KPH

Free Flight Distance:219.16 mm

HICd: 717.9

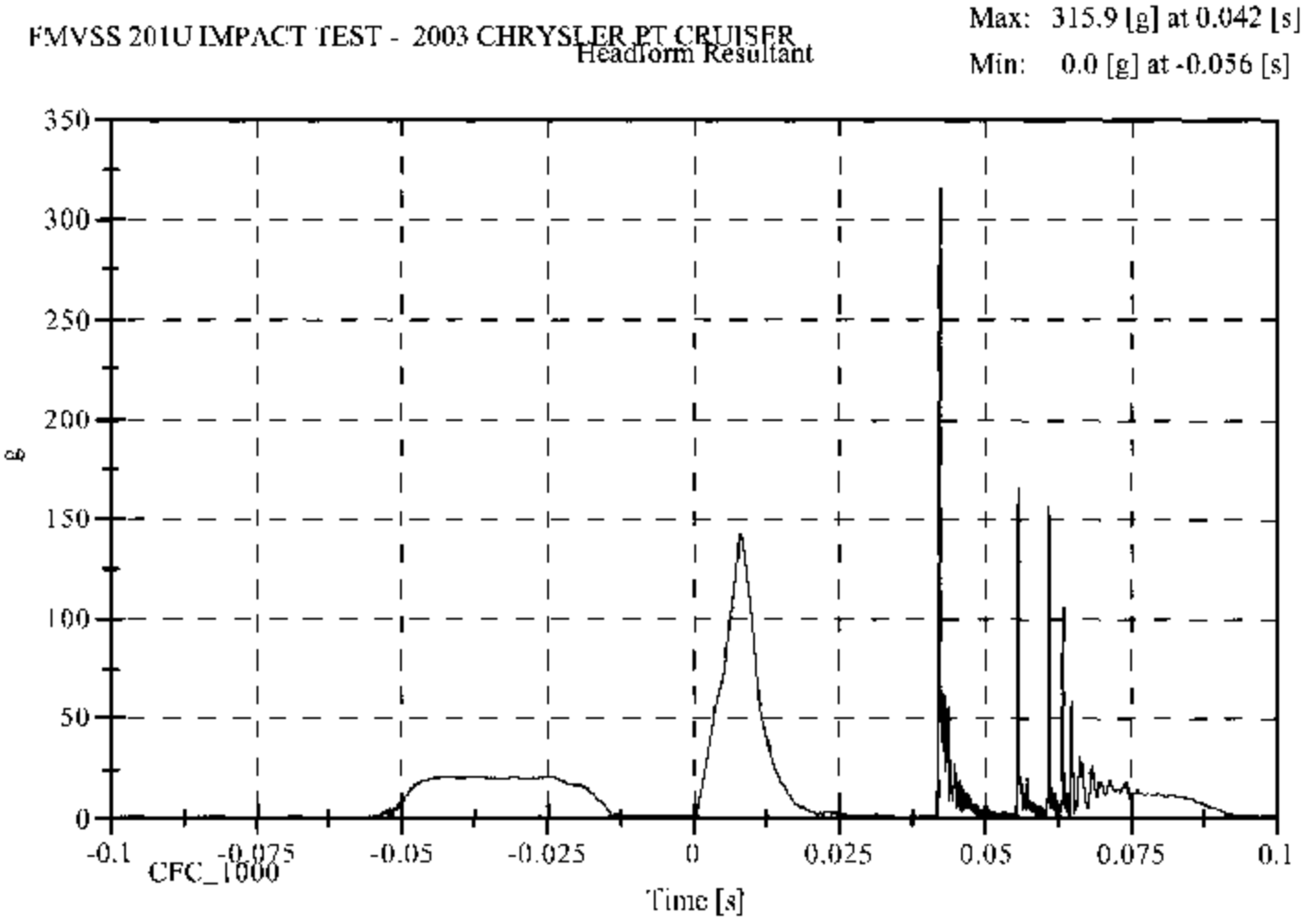
HIC (36ms): 731.0

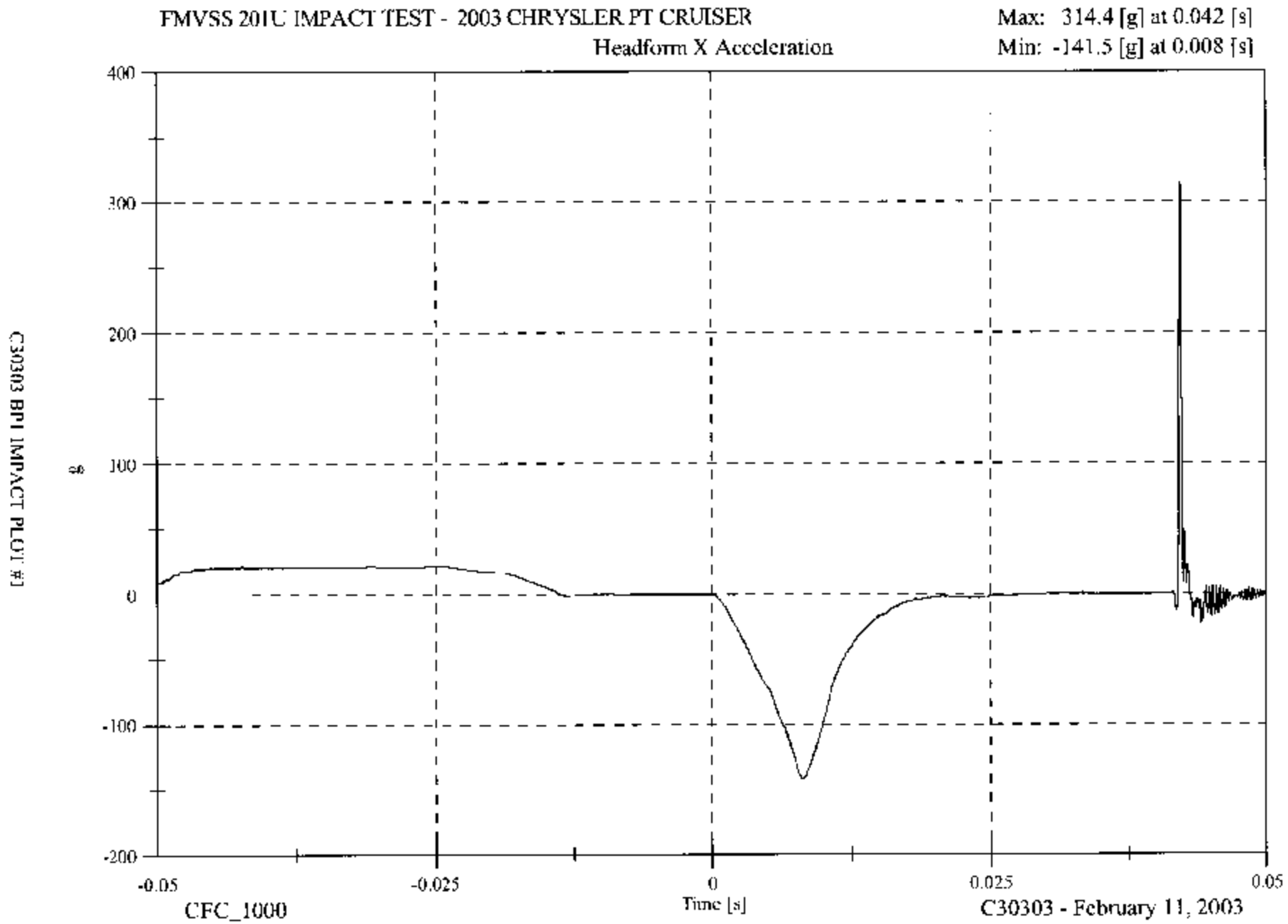
t1: 4.1 msec

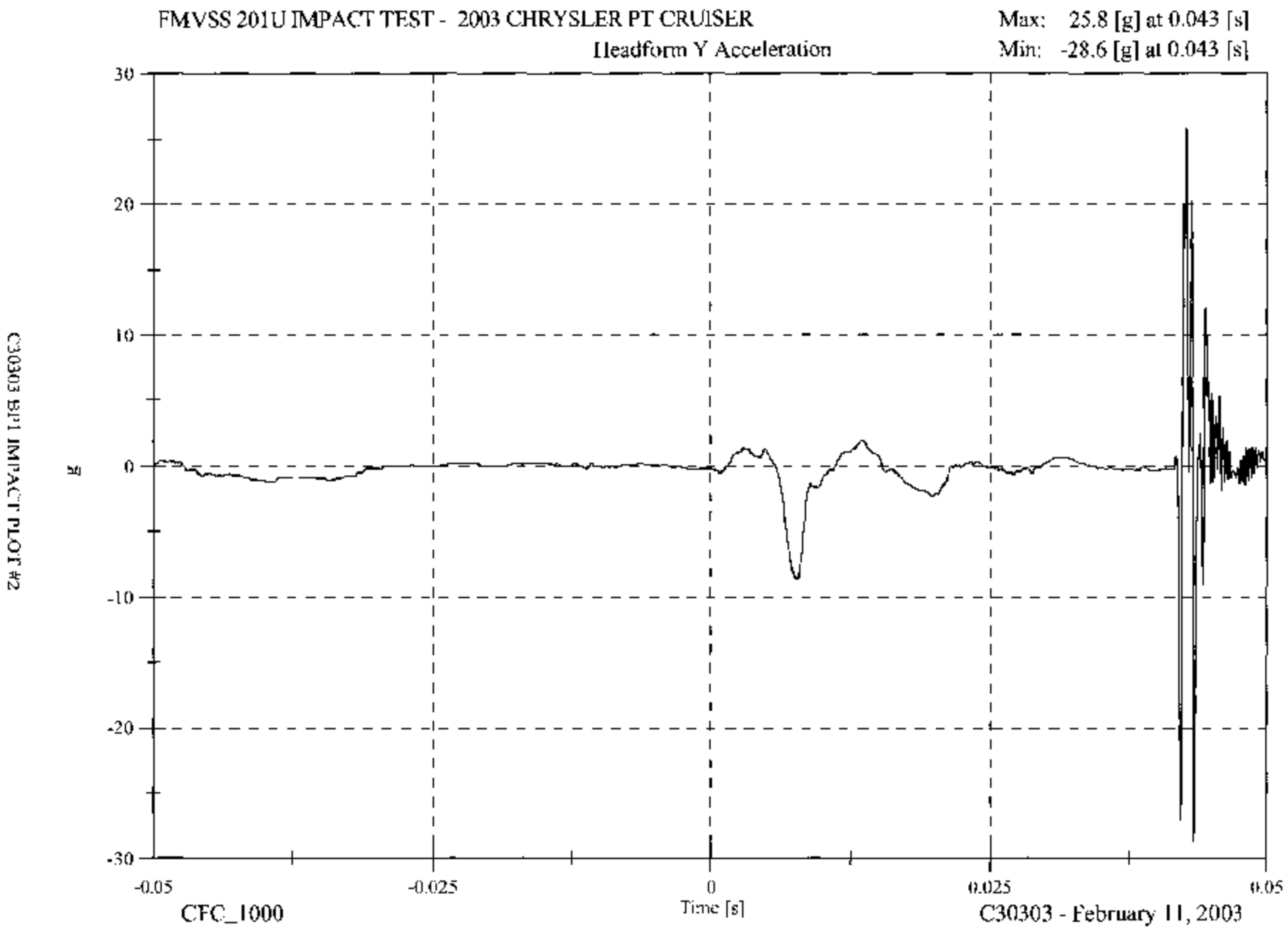
t2: 11.2 msec

Duration: 7.1 msec

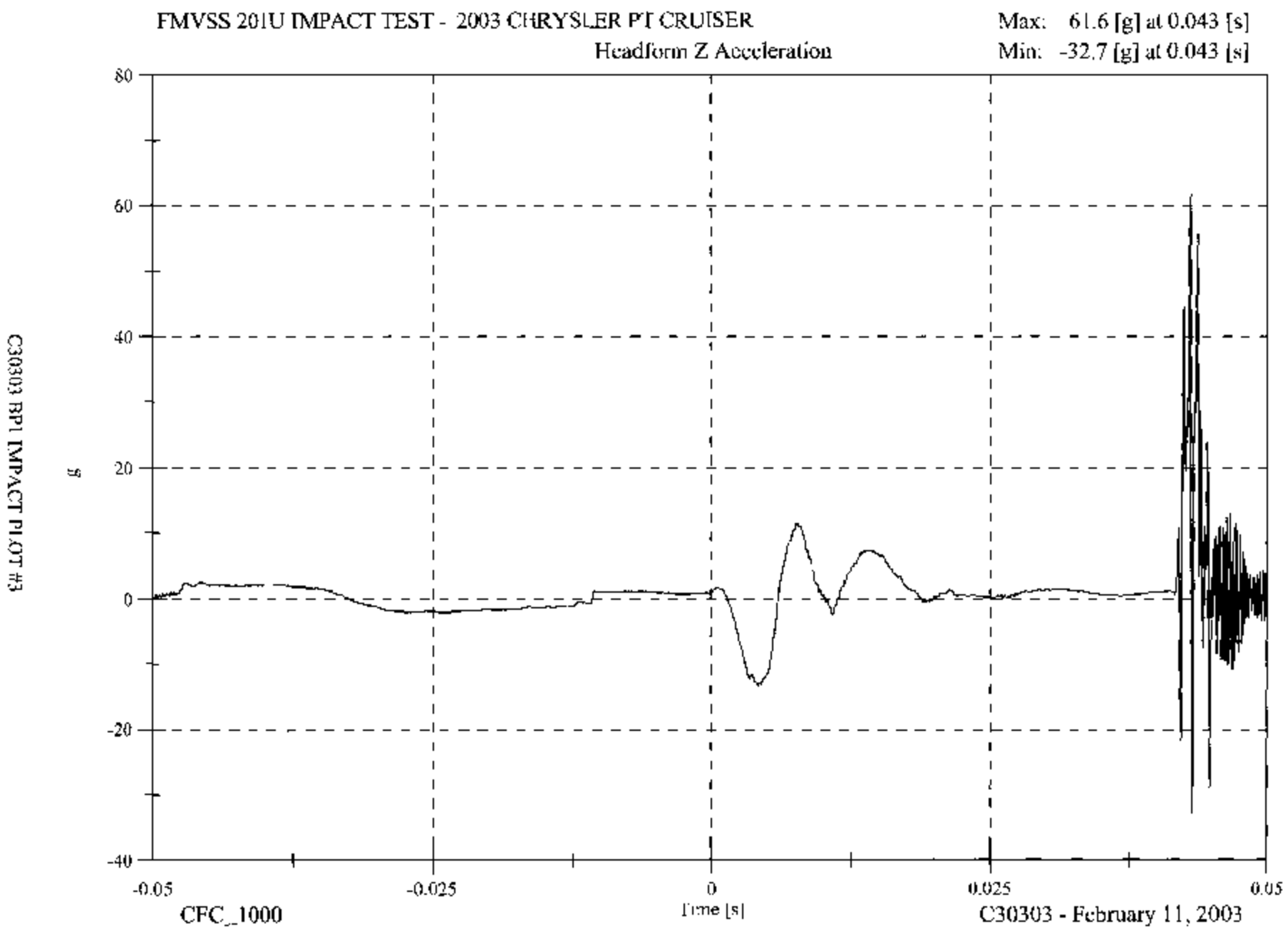
Average Acceleration: 12.4 g




FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform X Acceleration
Max: 314.4 [g] at 0.042 [s]
Min: -141.5 [g] at 0.008 [s]
400
300
200
100
0
-100
-200
g's
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003
C30303 BP1 IMPACT PLOT #3



C30303 BP1 IMPACT PLOT #2


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Z Acceleration
Max: 61.6 [g] at 0.043 [s]
Min: -32.7 [g] at 0.043 [s]
C30303 BP1 IMPACT PLOT #3
g
80
60
40
20
0
-20
-40
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003

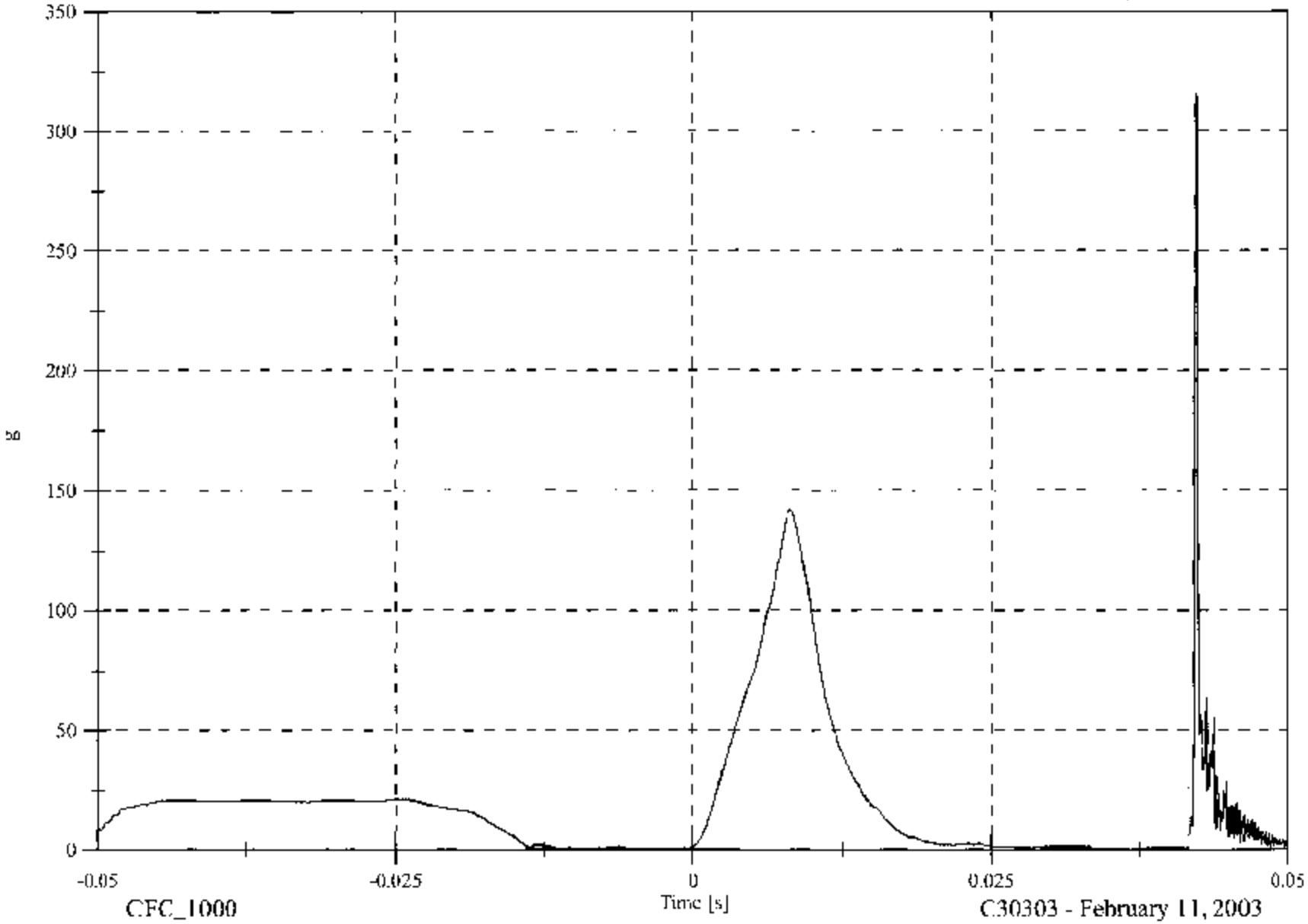
C30303 BP1 IMPACT PLOT #4

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER

Headform Resultant

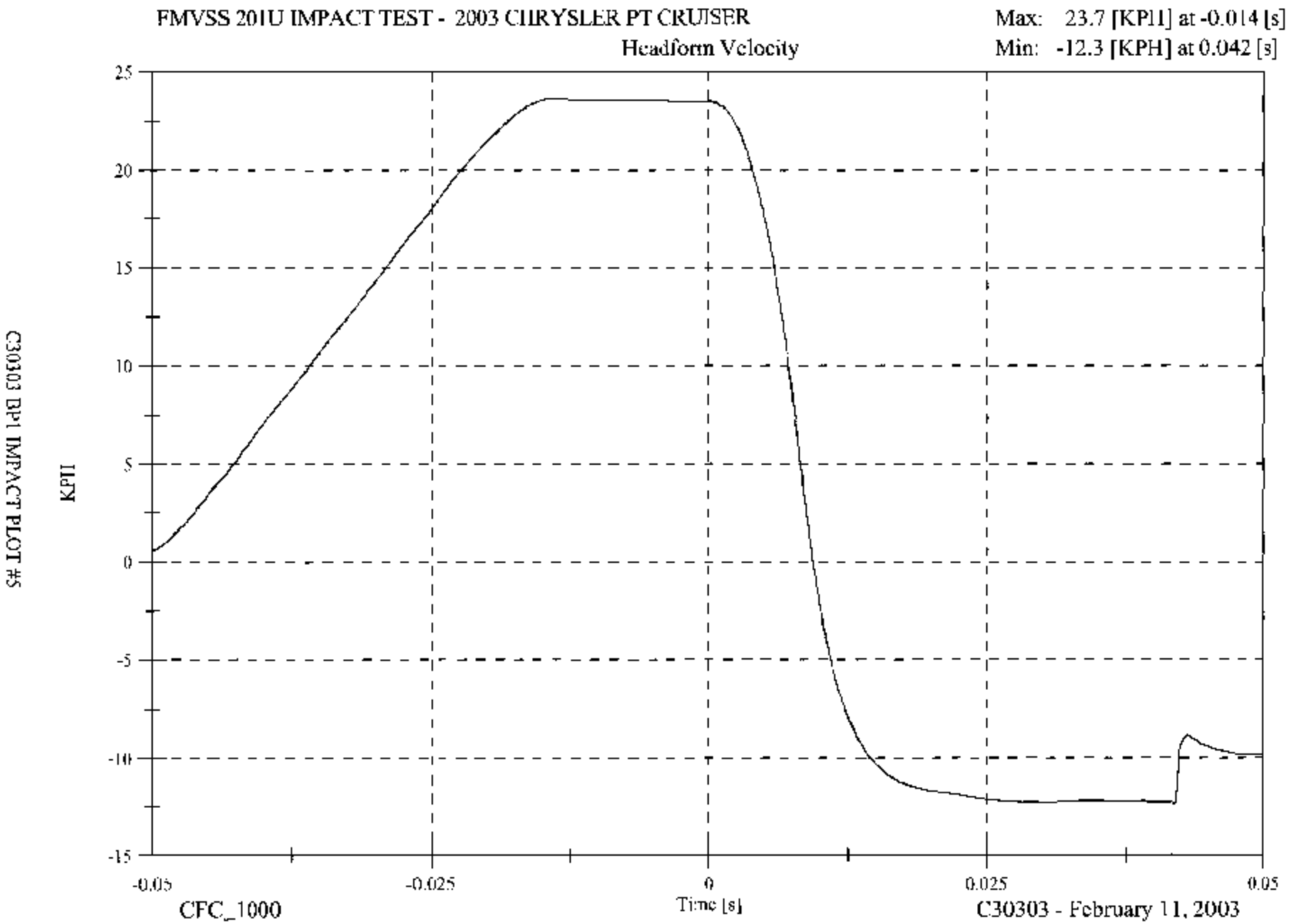
Max: 315.9 [g] at 0.042 [s]

Min: 0.3 [g] at -0.011 [s]



CFC_1000

C30303 - February 11, 2003


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Velocity
Max: 23.7 [KPH] at -0.014 [s]
Min: -12.3 [KPH] at 0.042 [s]
KPH
25
20
15
10
5
0
-5
-10
-15
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003
C30303 DPI IMPACT PLOT #5

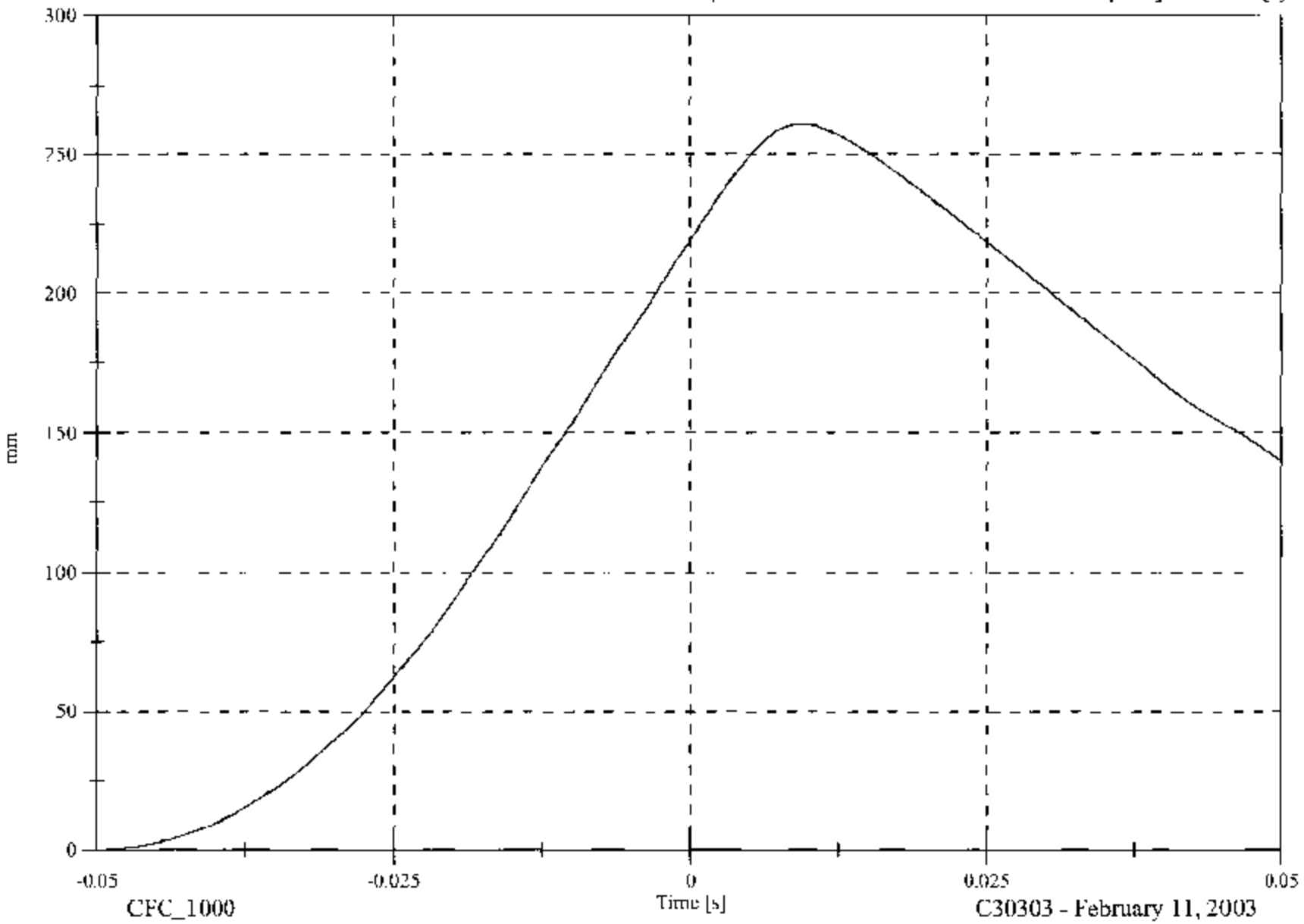
C30303 BPI IMPACT PLOT #6

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER

Headform Displacement

Max: 261.0 [mm] at 0.009 [s]

Min: 0.3 [mm] at -0.050 [s]



CFC_1000

C30303 - February 11, 2003

Figure 1. Typical Installation

8653-FMH-10

Figure : POST-TEST BP1

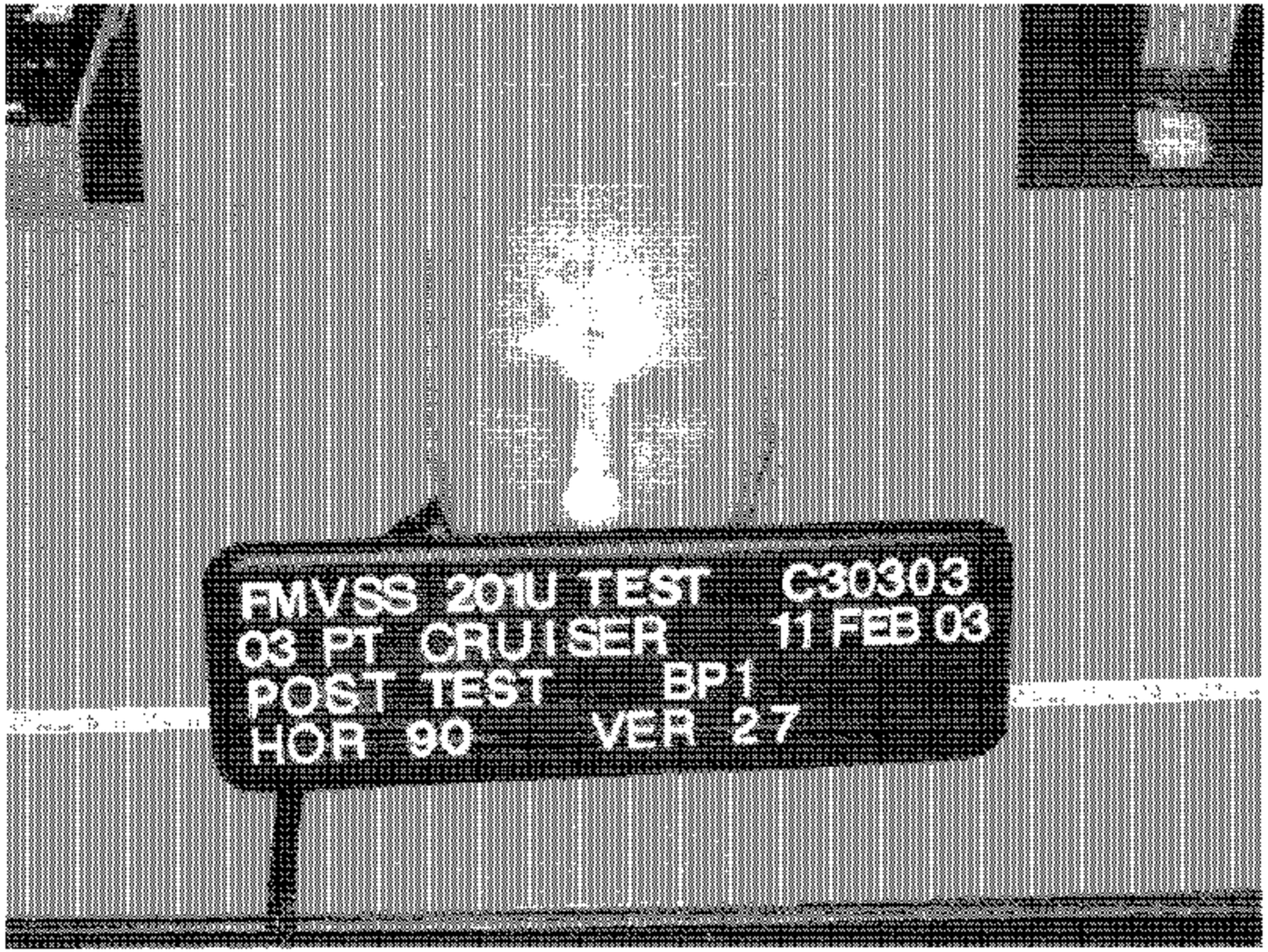


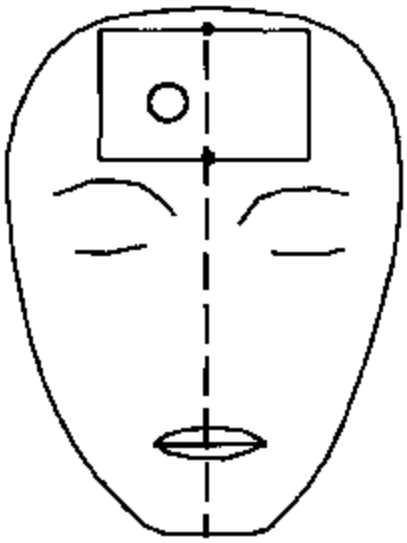
Figure : BP1 HEADFORM

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	3	Test Date:	2/11/03
Target Location:	Rear Pillar	Target Code:	RP2
Horizontal Impact Angle:	43 °	Vertical Impact Angle:	7 °
Ambient Temperature:	20 °C	Time of Impact:	13:45
Headform Number:	0642		

Impact Point:
Description:

Description:	From lower midpoint				
On centerline	19	mm up			
On centerline	7	x	mm right	-	mm left



Free Motion HIC:	751.0	HIC(d):	733.4		
Impact Velocity (kph):	23.56	HICT1	3.7 msec	HICT2	12.3 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - RP2

FMH Headform 642

Location: RP2

Test Date: February 11, 2003

Work File: RP2

----------TEST RESULTS----------

Lab Temperature: 20 C

Lab Humidity: 13 %

Velocity at Impact: 23.56 KPH

Free Flight Distance: 213.55 mm

HICd: 733.4

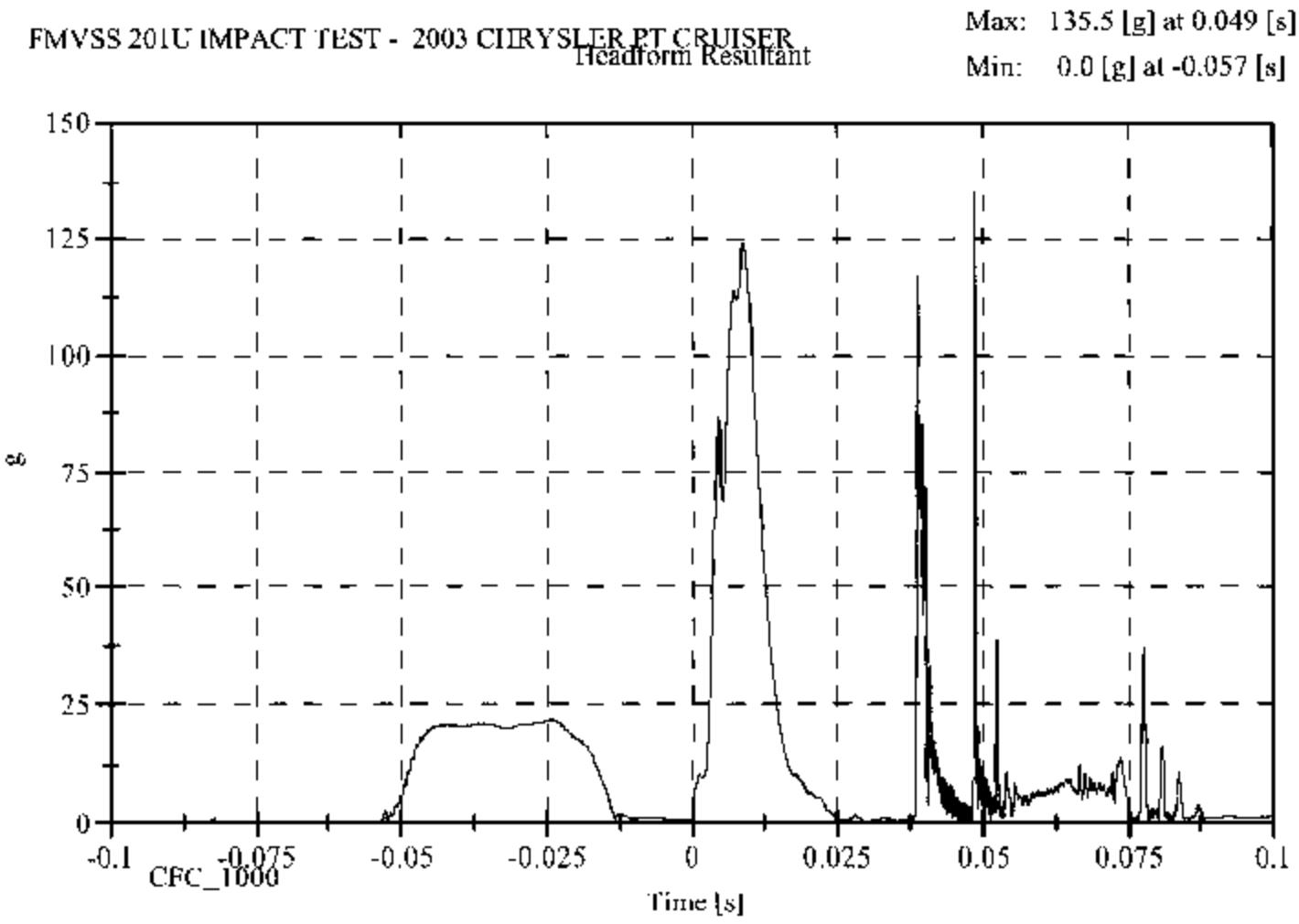
HIC (36ms): 751.5

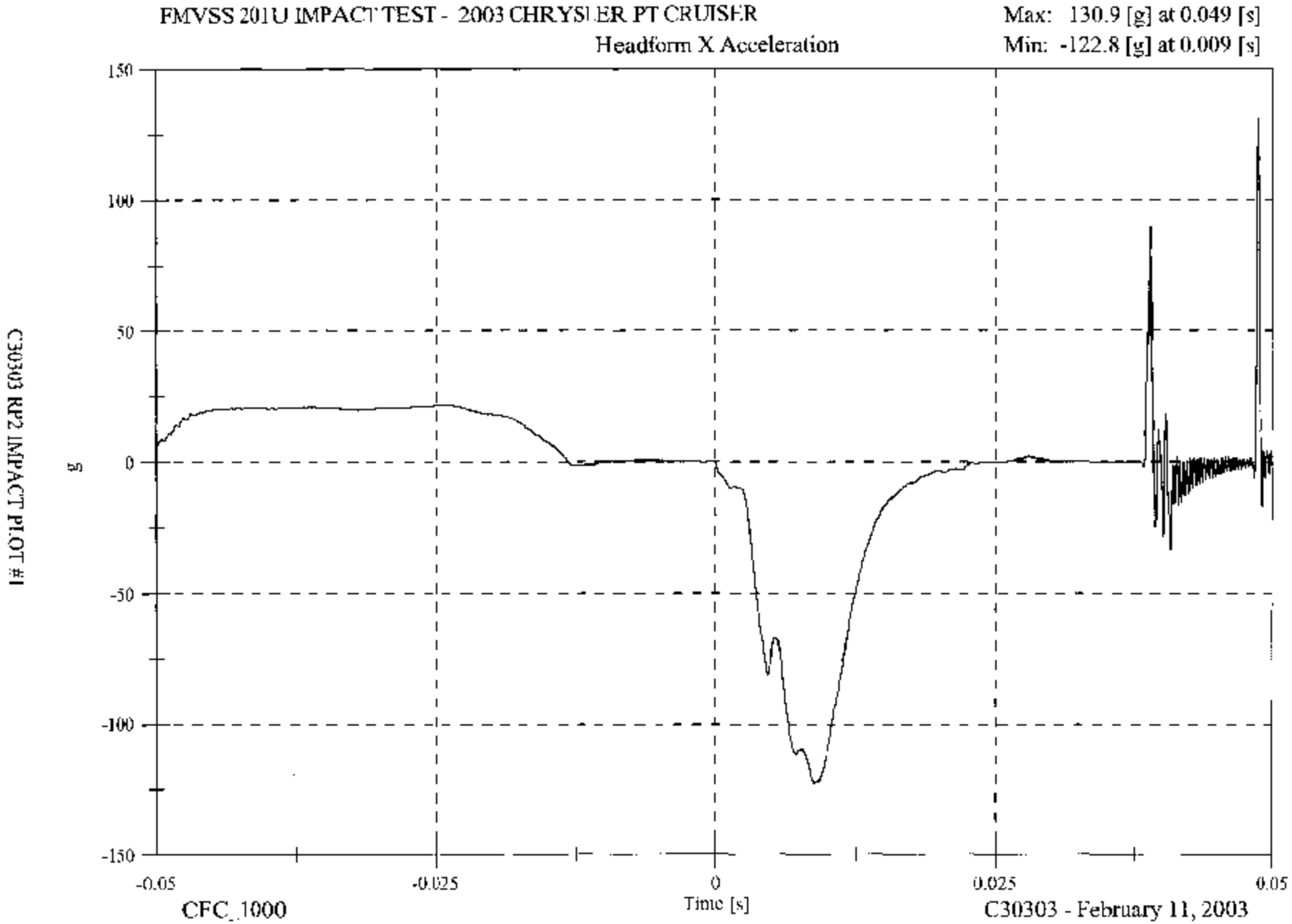
t1: 3.7 msec

t2: 12.3 msec

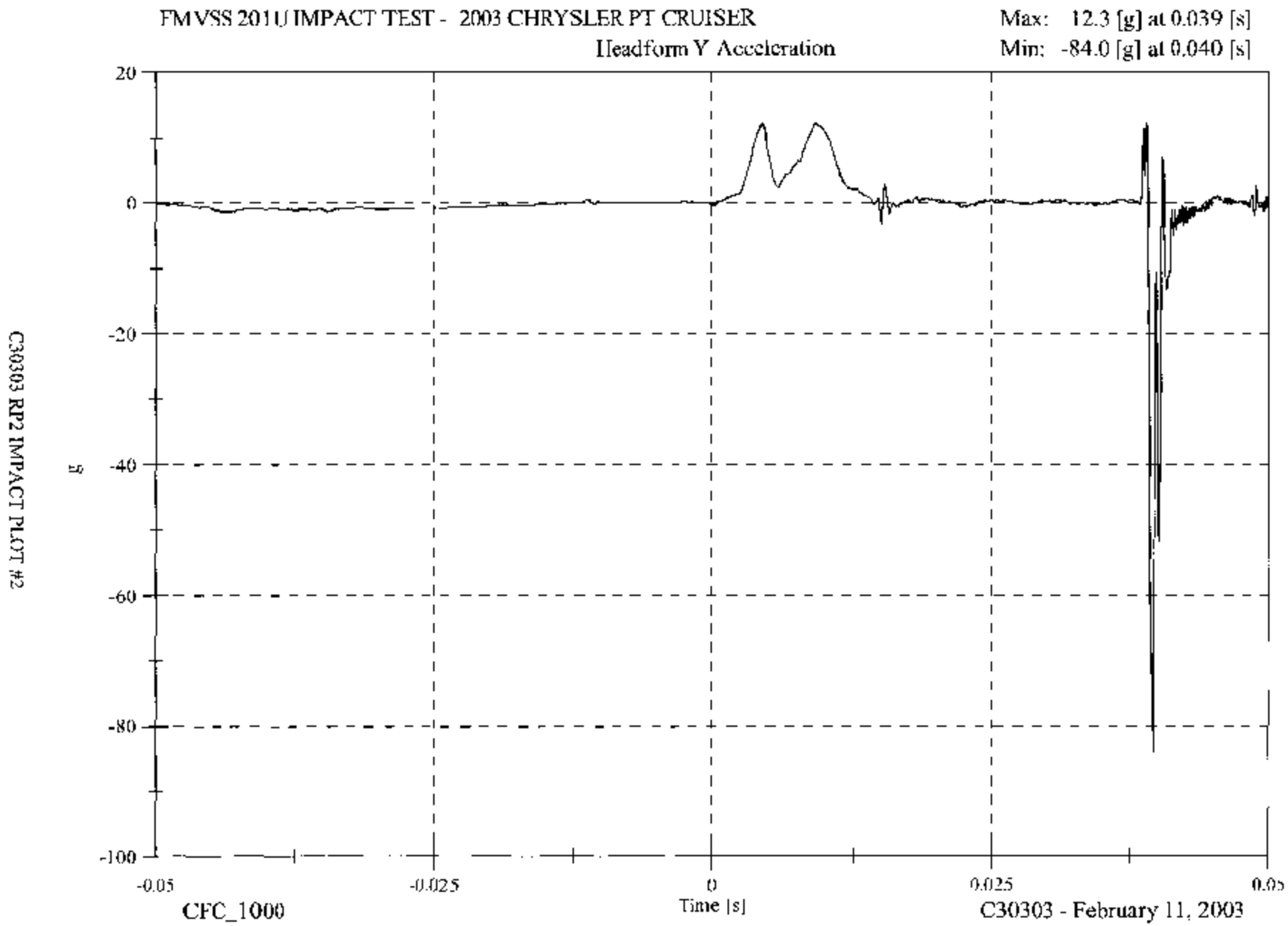
Duration: 8.6 msec

Average Acceleration: 11.3 g

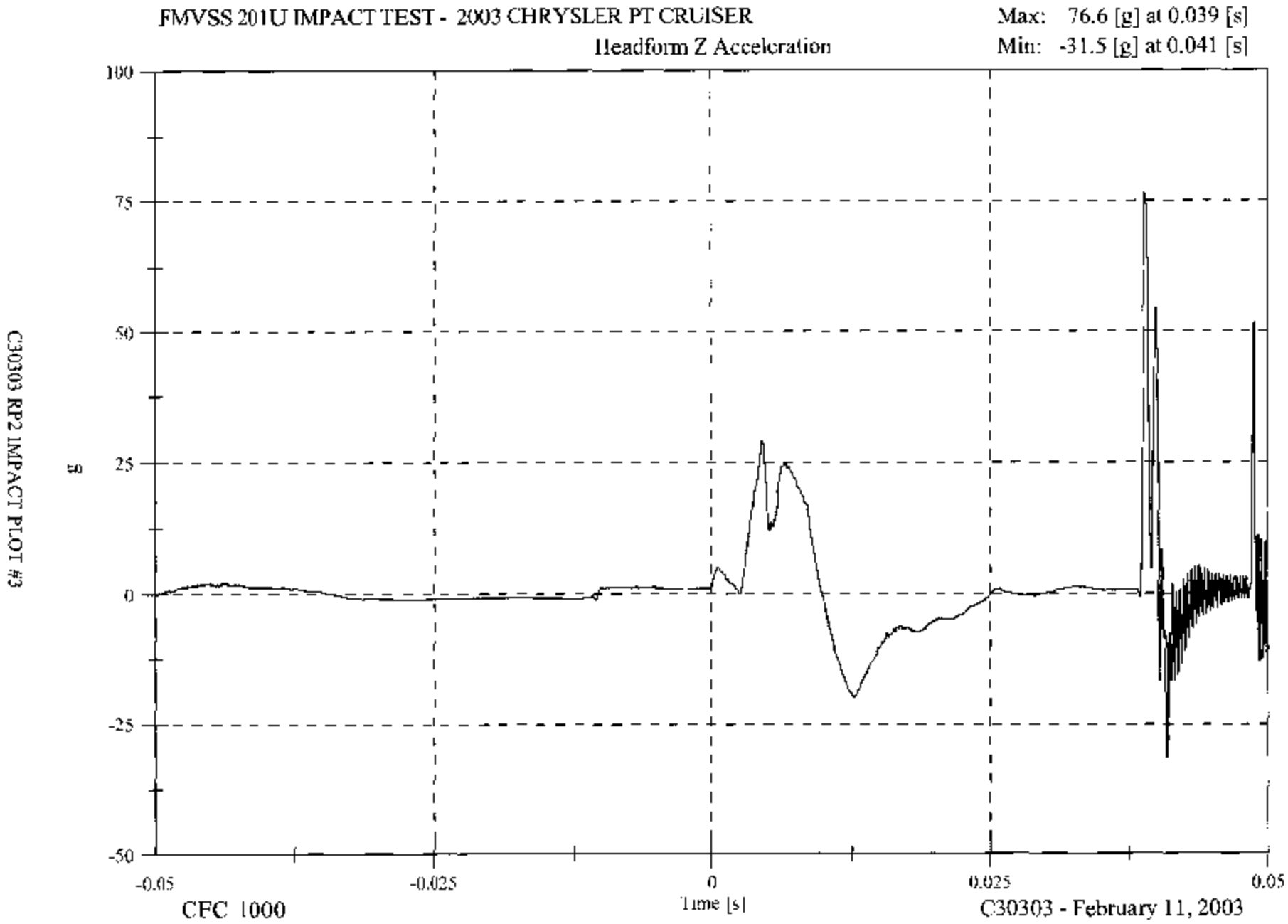




C30303 RP2 IMPACT PLOT #1

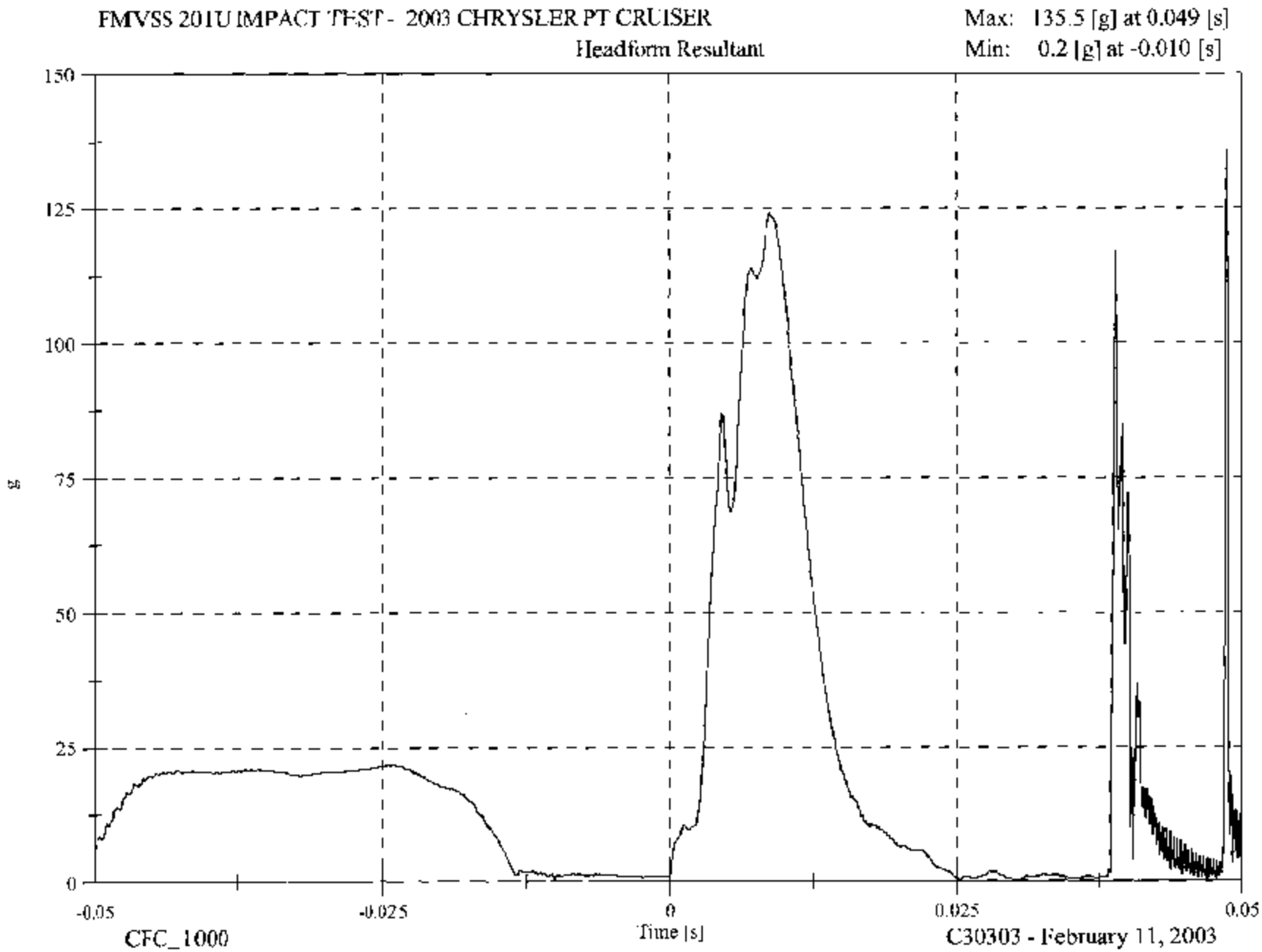


C30303 RP2 IMPACT PLOT #2

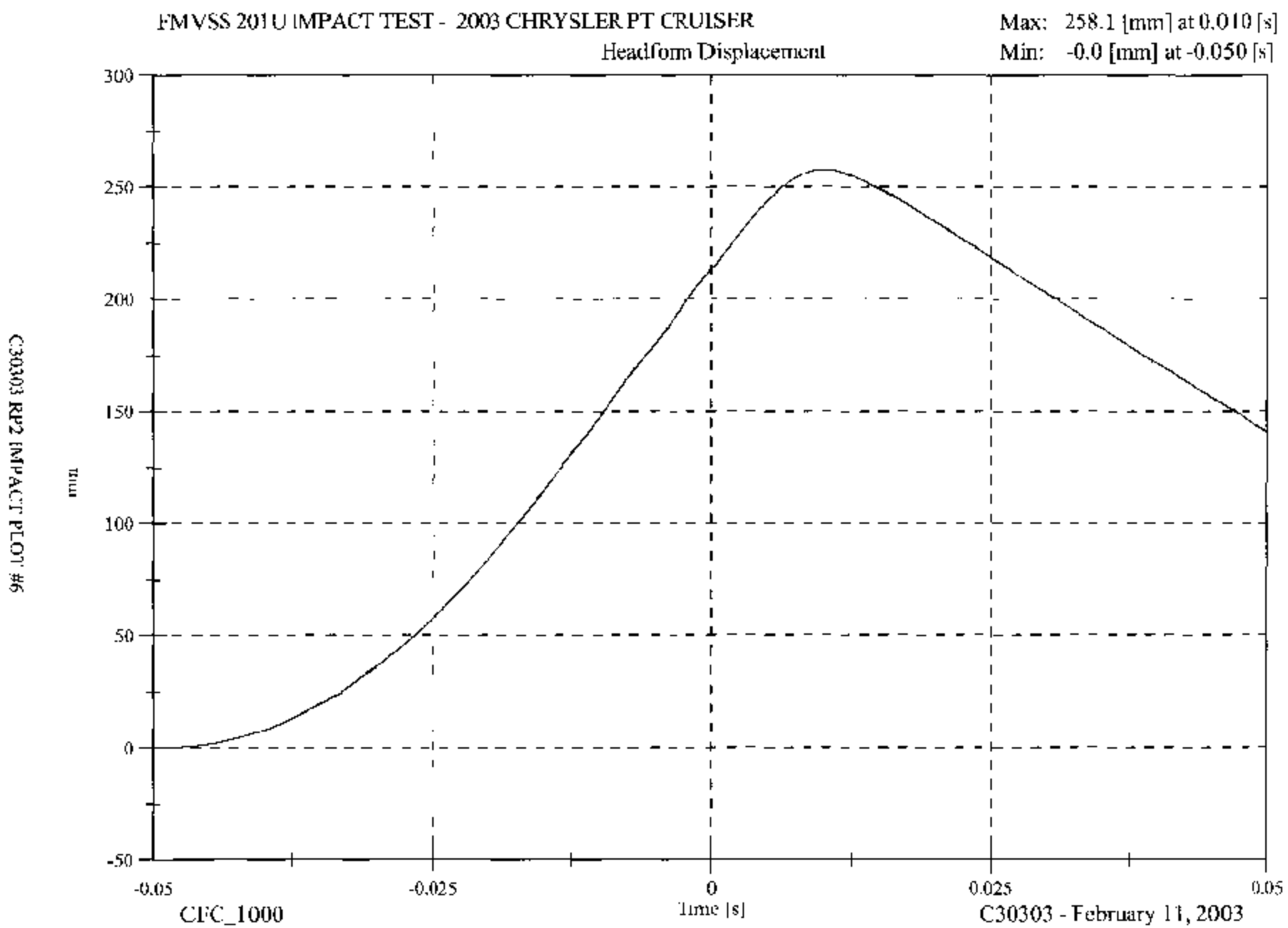


C30303 RP2 IMPACT PLOT #3

C30303 RP2 IMPACT PLOT #4



C30303 RP2 IMPACT PLOT # 5



C30303 RP2 IMPACT PLOT #6

Figure . PRE-TEST RP2

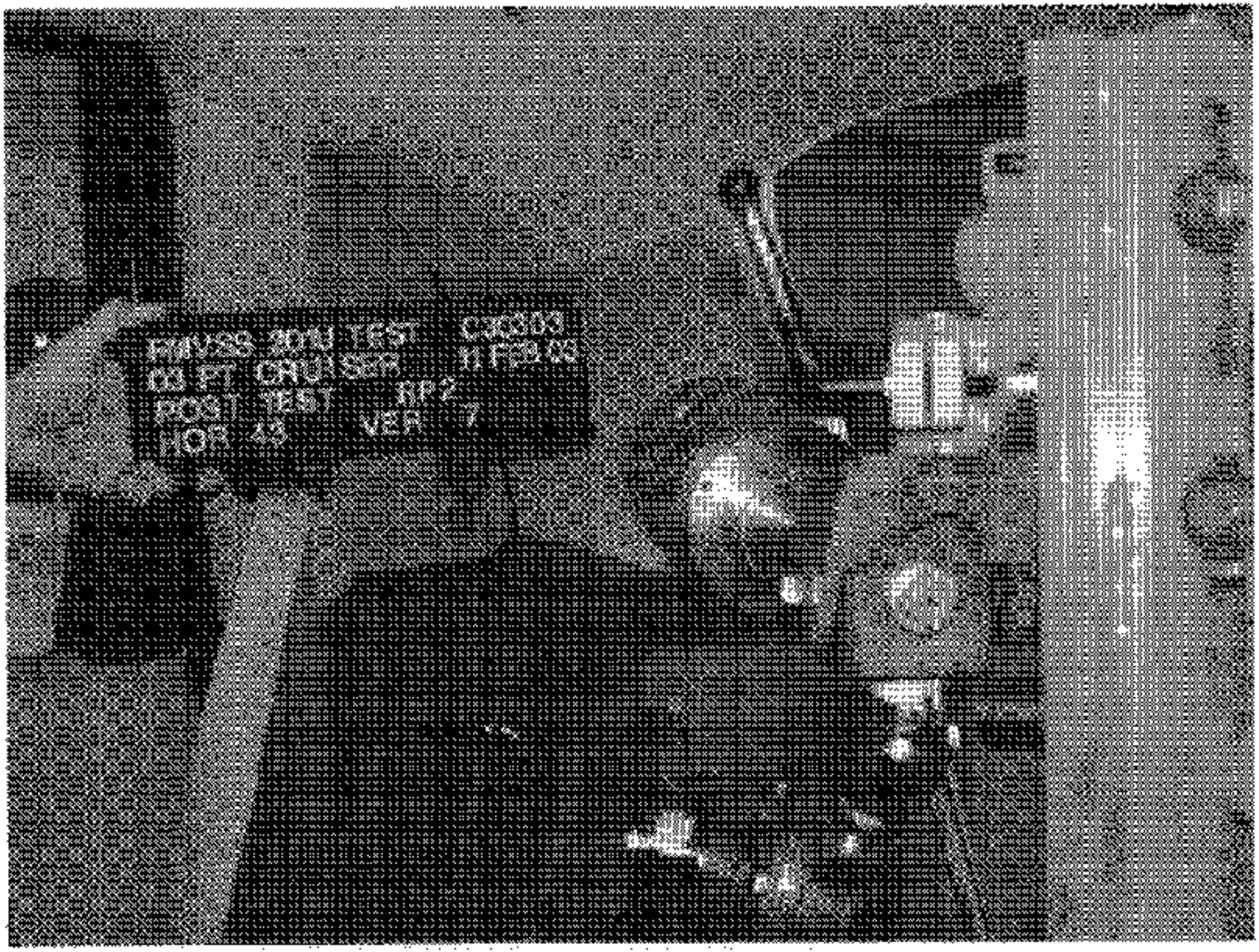


Figure : POST-TEST RP2

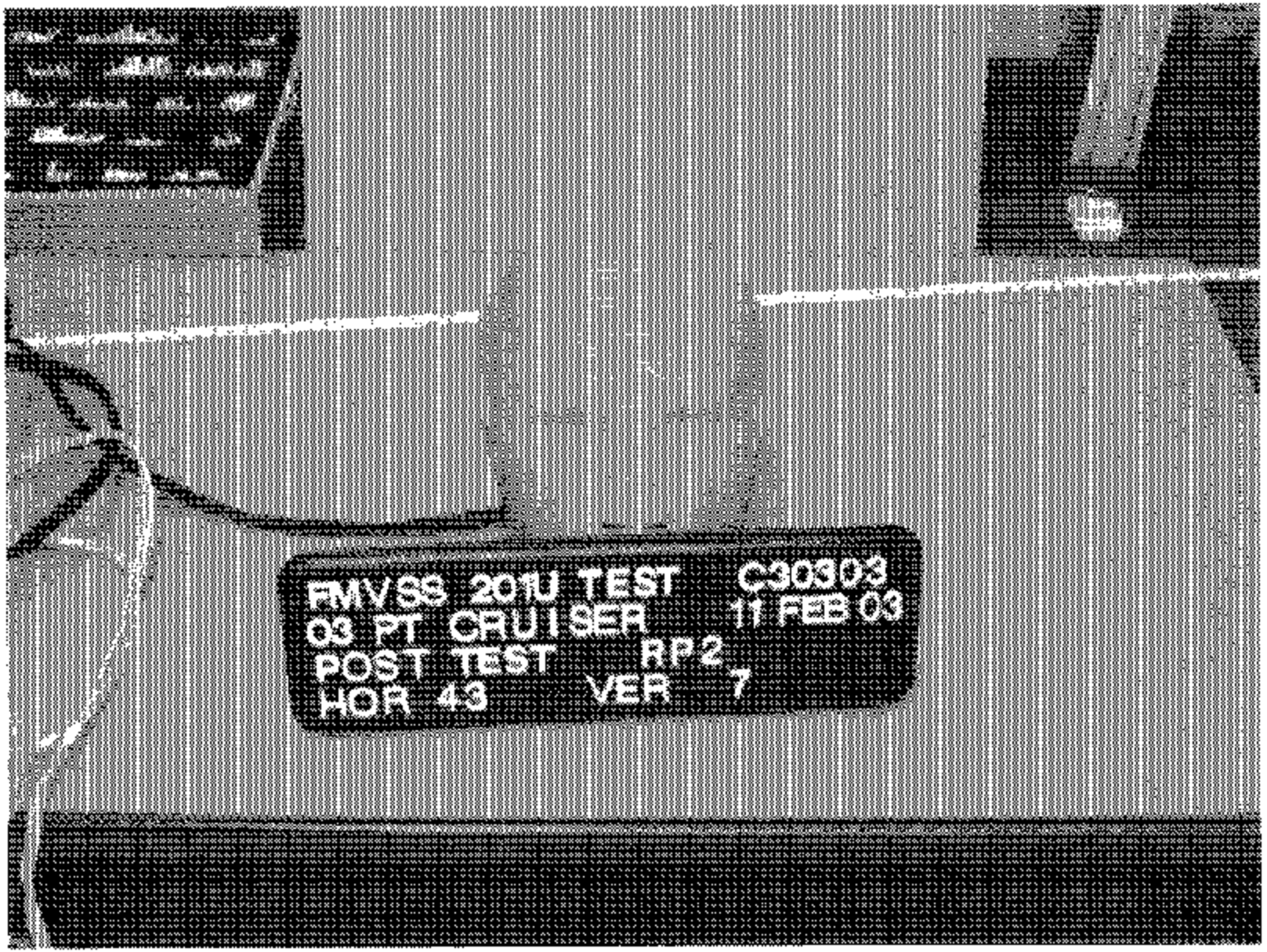


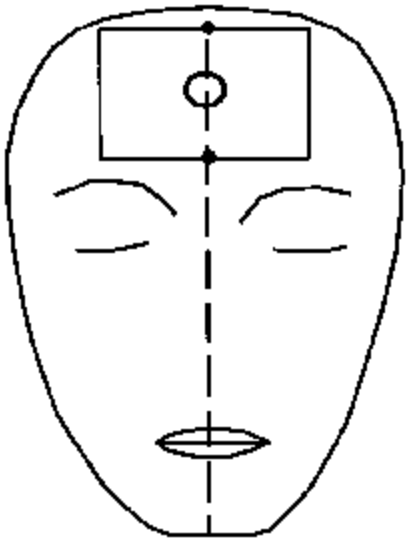
Figure 1: RPI HEADFORM

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	4	Test Date:	2/17/03
Target Location:	A-pillar	Target Code:	AP2
Horizontal Impact Angle:	150 °	Vertical Impact Angle:	36 °
Ambient Temperature:	20 °C	Time of Impact:	14:30
Headform Number:	0355		

Impact Point:
Description:

Description:	From lower midpoint				
On centerline	31	mm up			
On centerline	0	-	mm right	-	mm left



Free Motion HIC:	679.1	HIC(d):	678.8		
Impact Velocity (kph):	23.89	HICT1	2.9 msec	HICT2	10.5 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - AP2

FMH Headform 0355

Location: AP2

Test Date: February 11, 2003

Work File: AP2

----------TEST RESULTS----------

Lab Temperature: 20 C

Lab Humidity: 13 %

Velocity at Impact: 23.89 KPH

Free Flight Distance:222.08 mm

HICd: 678.8

HIC (36ms): 679.1

t1: 2.9 msec

t2: 10.5 msec

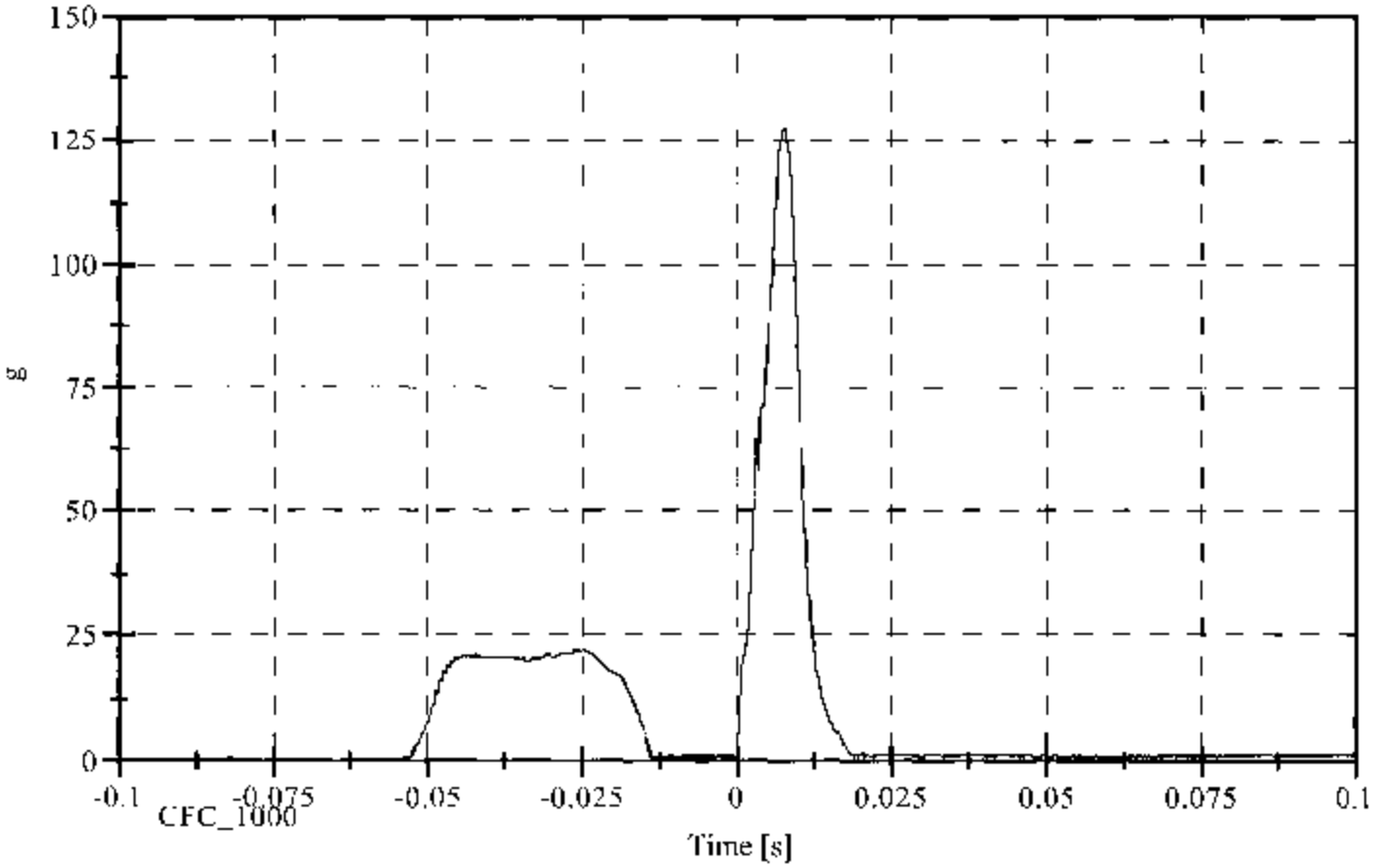
Duration: 7.6 msec

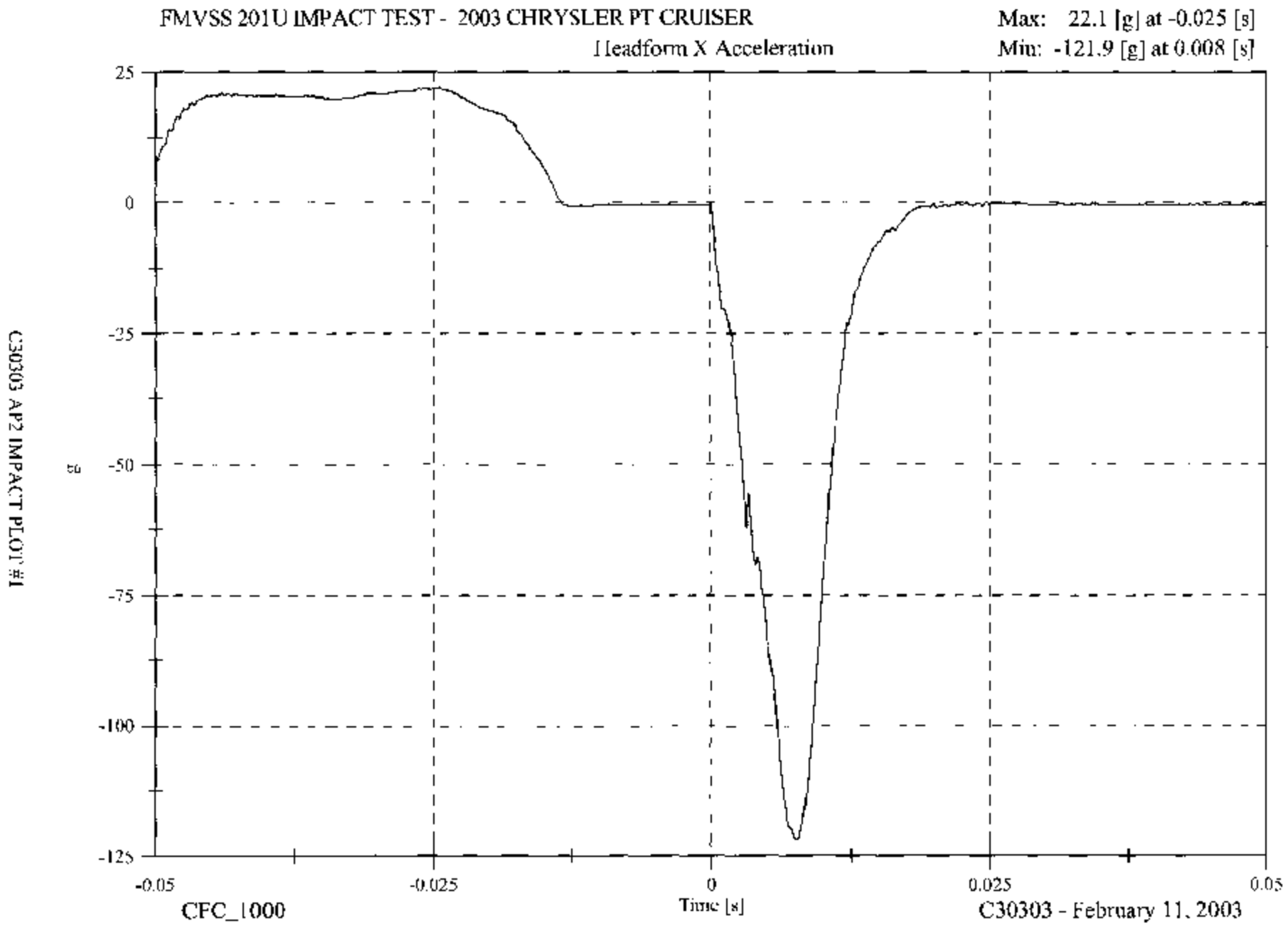
Average Acceleration: 8.6 g

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Resultant

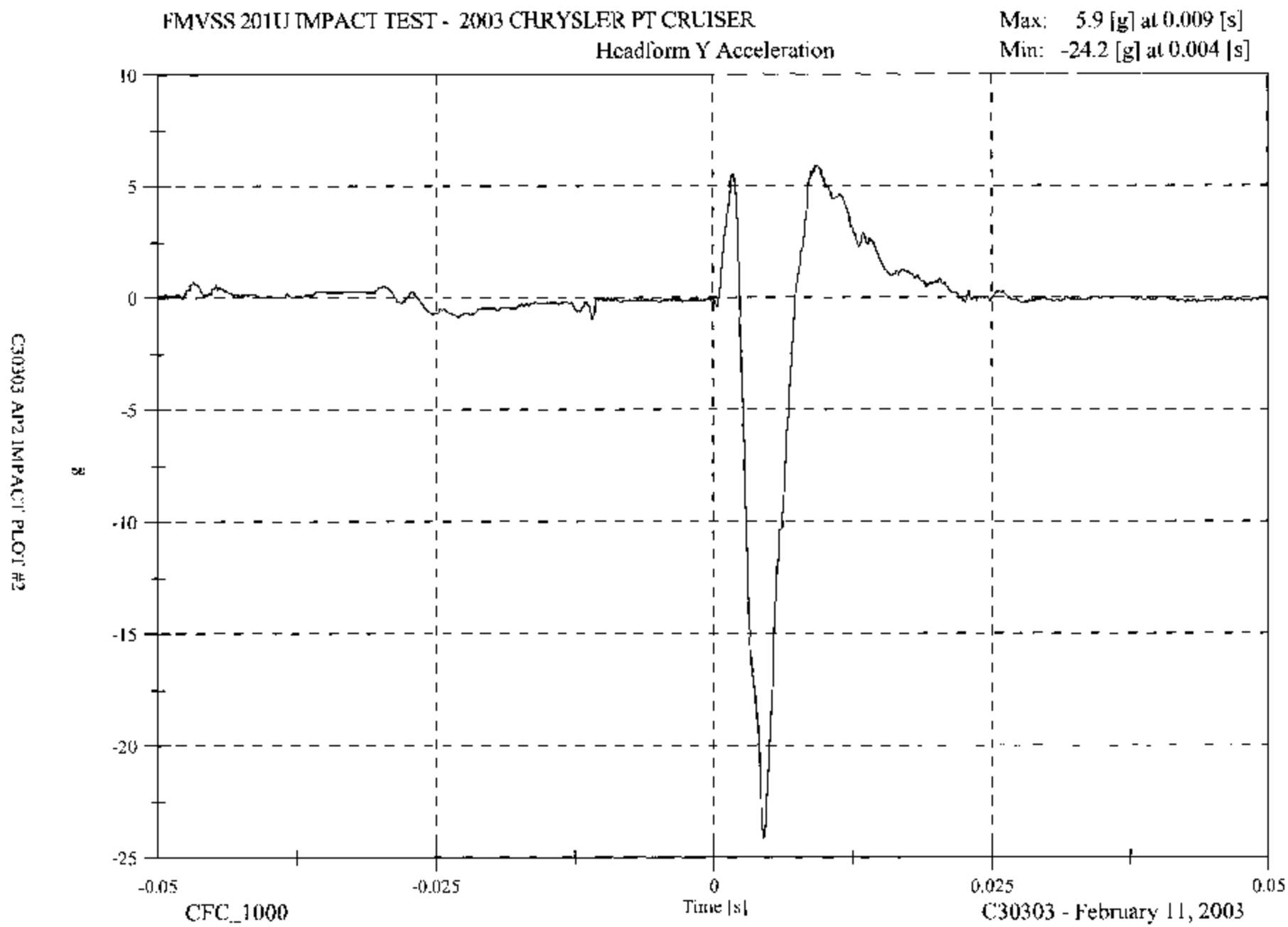
Max: 128.0 [g] at 0.008 [s]

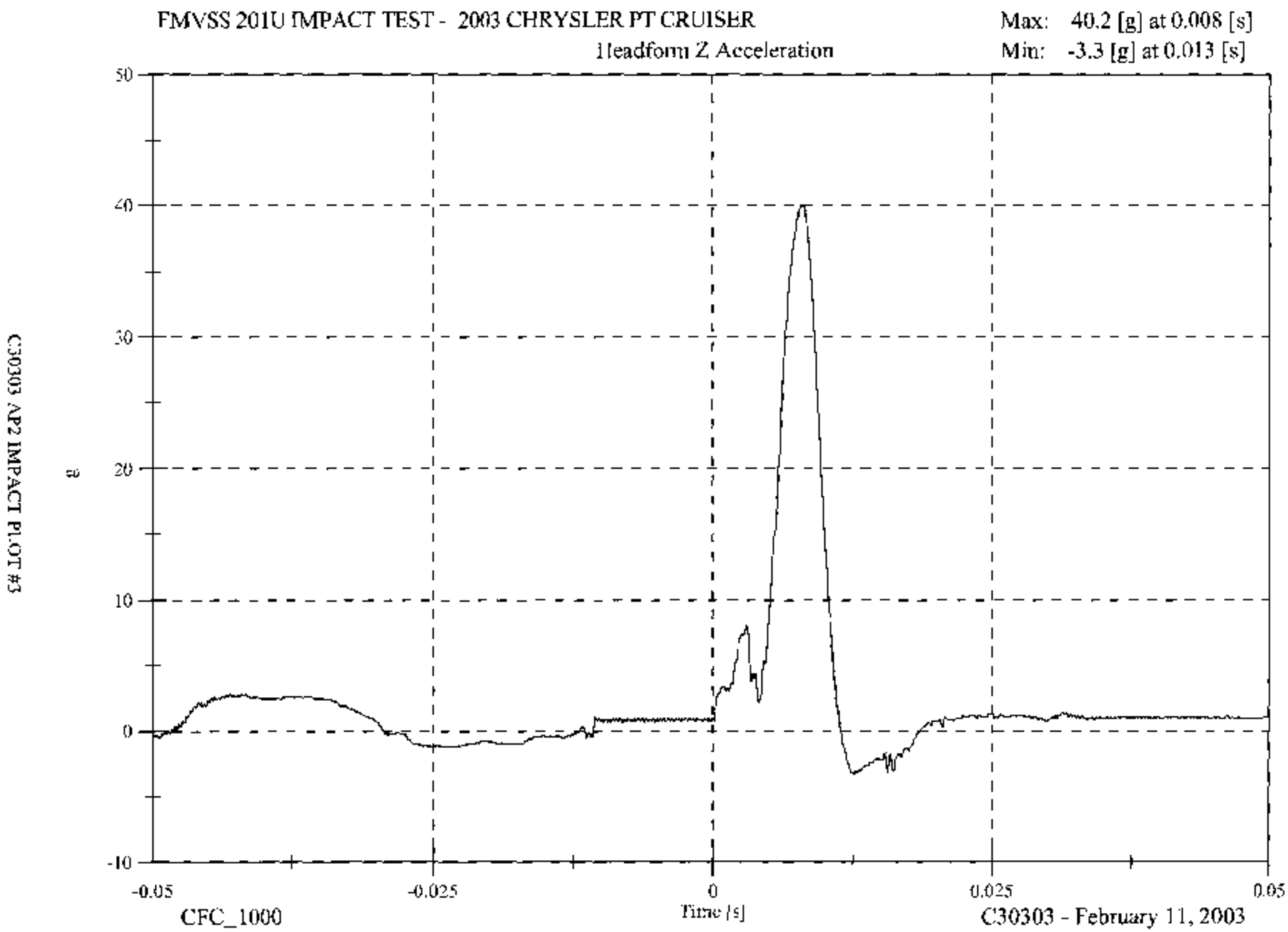
Min: 0.0 [g] at -0.097 [s]



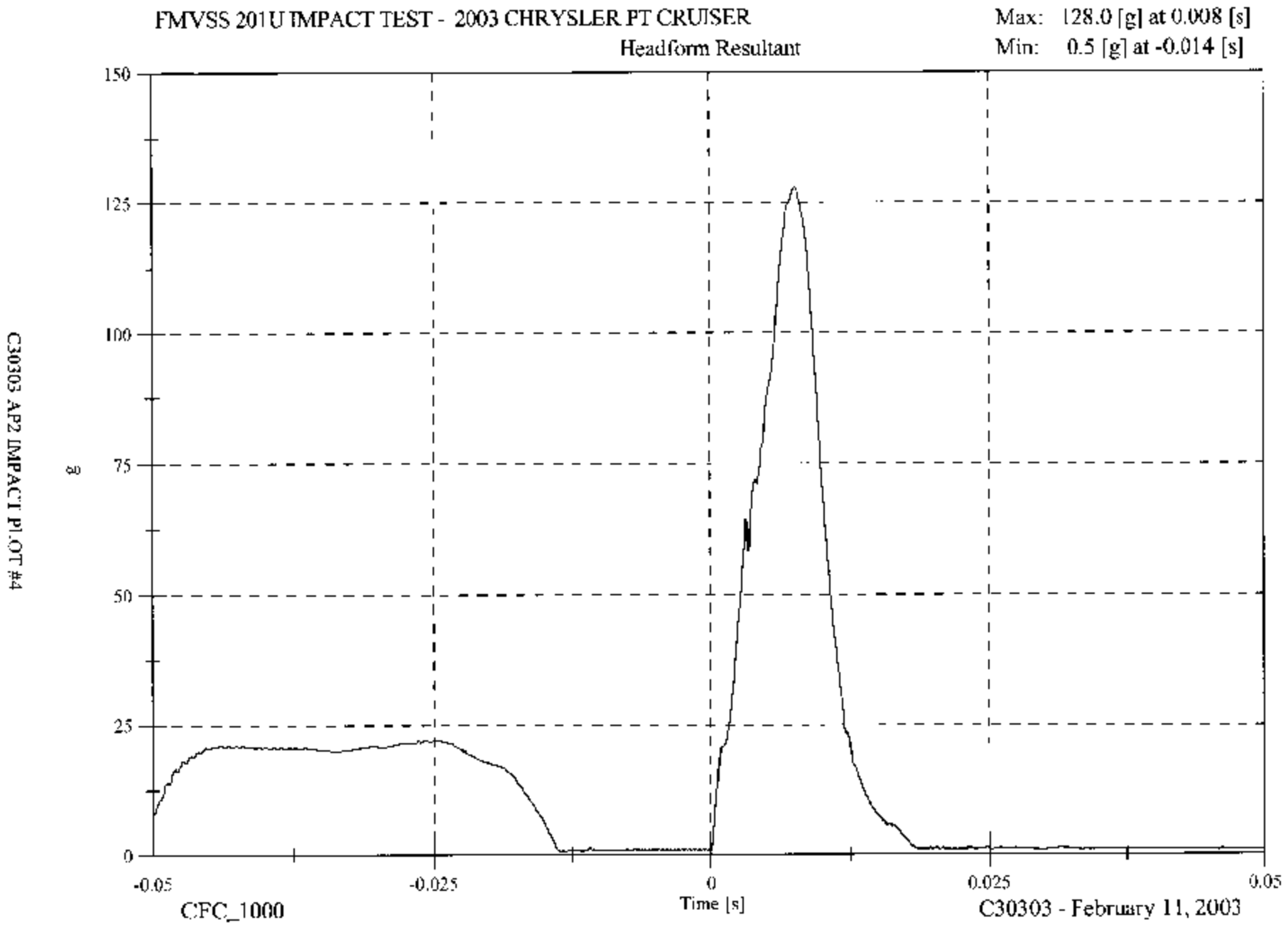


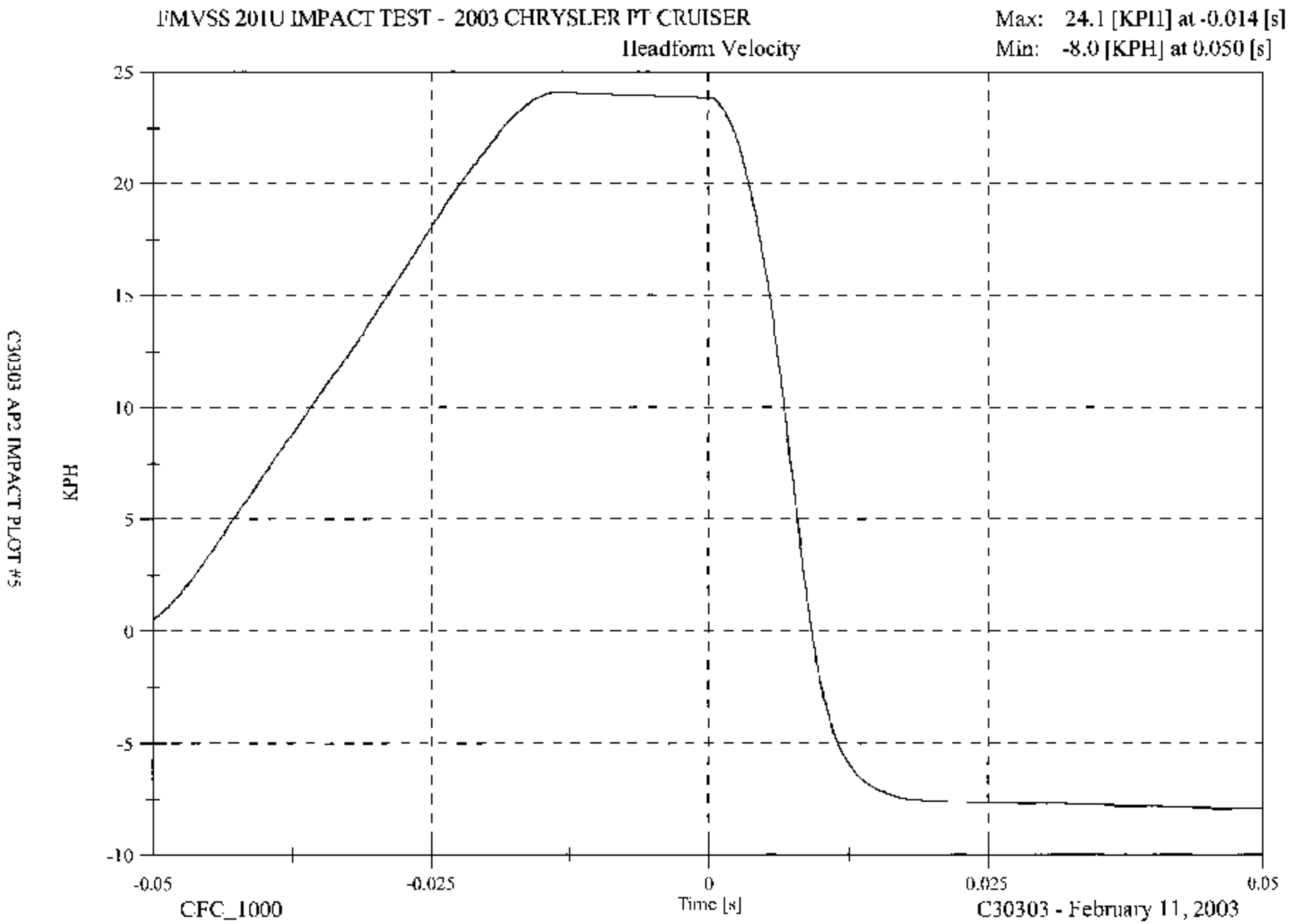
C30303 AP2 IMPACT PLOT #1


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Y Acceleration
Max: 5.9 [g] at 0.009 [s]
Min: -24.2 [g] at 0.004 [s]
10
5
0
-5
-10
-15
-20
-25
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003
C30303 AP2 IMPACT PLOT #2

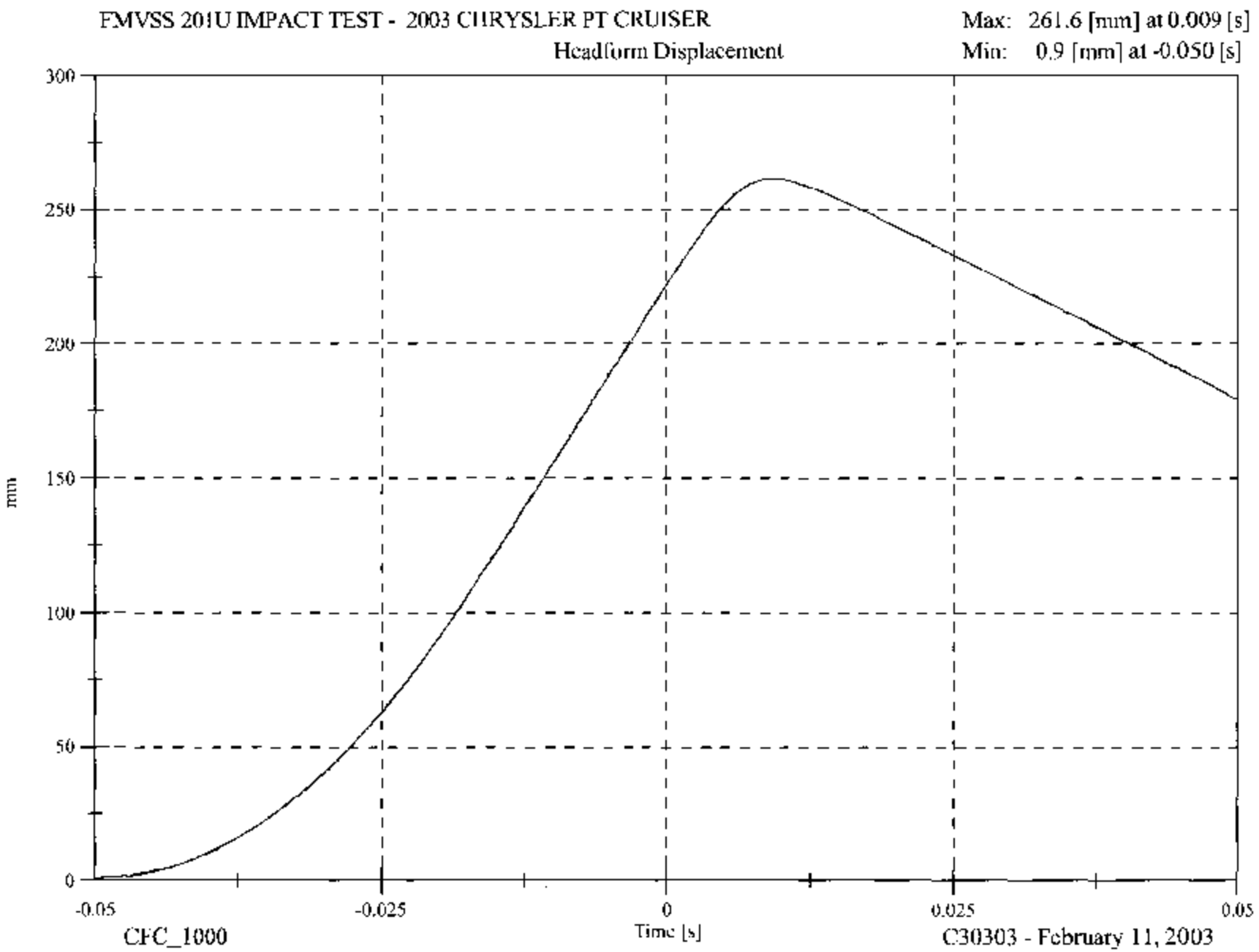


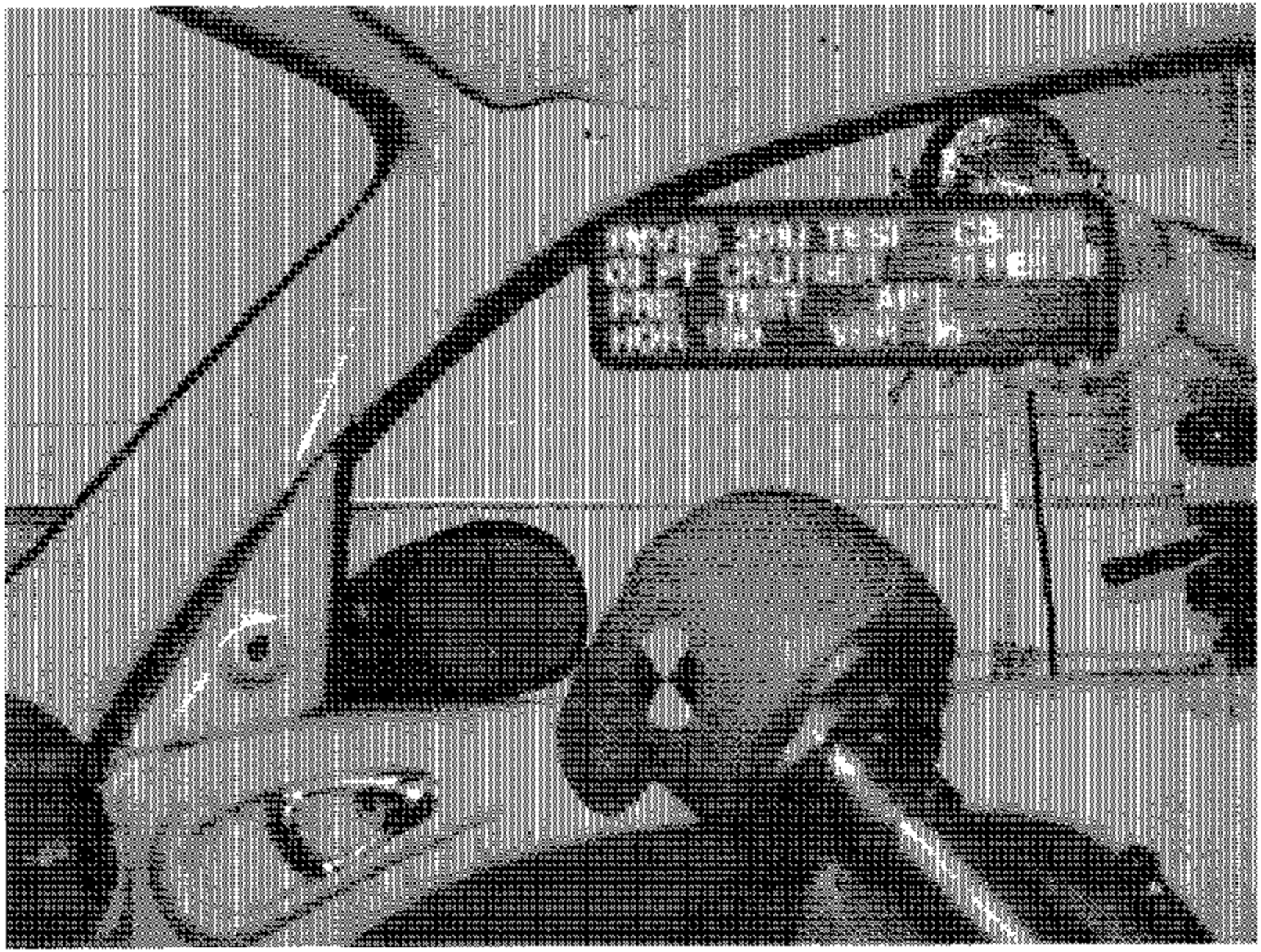
C30303 AP2 IMPACT PLOT #3


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Resultant
Max: 128.0 [g] at 0.008 [s]
Min: 0.5 [g] at -0.014 [s]
150
125
100
75
50
25
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003
C30303 AP2 IMPACT PLOT #4


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Velocity
Max: 24.1 [KPH] at -0.014 [s]
Min: -8.0 [KPH] at 0.050 [s]
C30303 AP2 IMPACT PLOT #5
KPH
25
20
15
10
5
0
-5
-10
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003

C30303 AP2 IMPACT PLOT #6





8653-0008-10

Figure : PRE-UST AP2

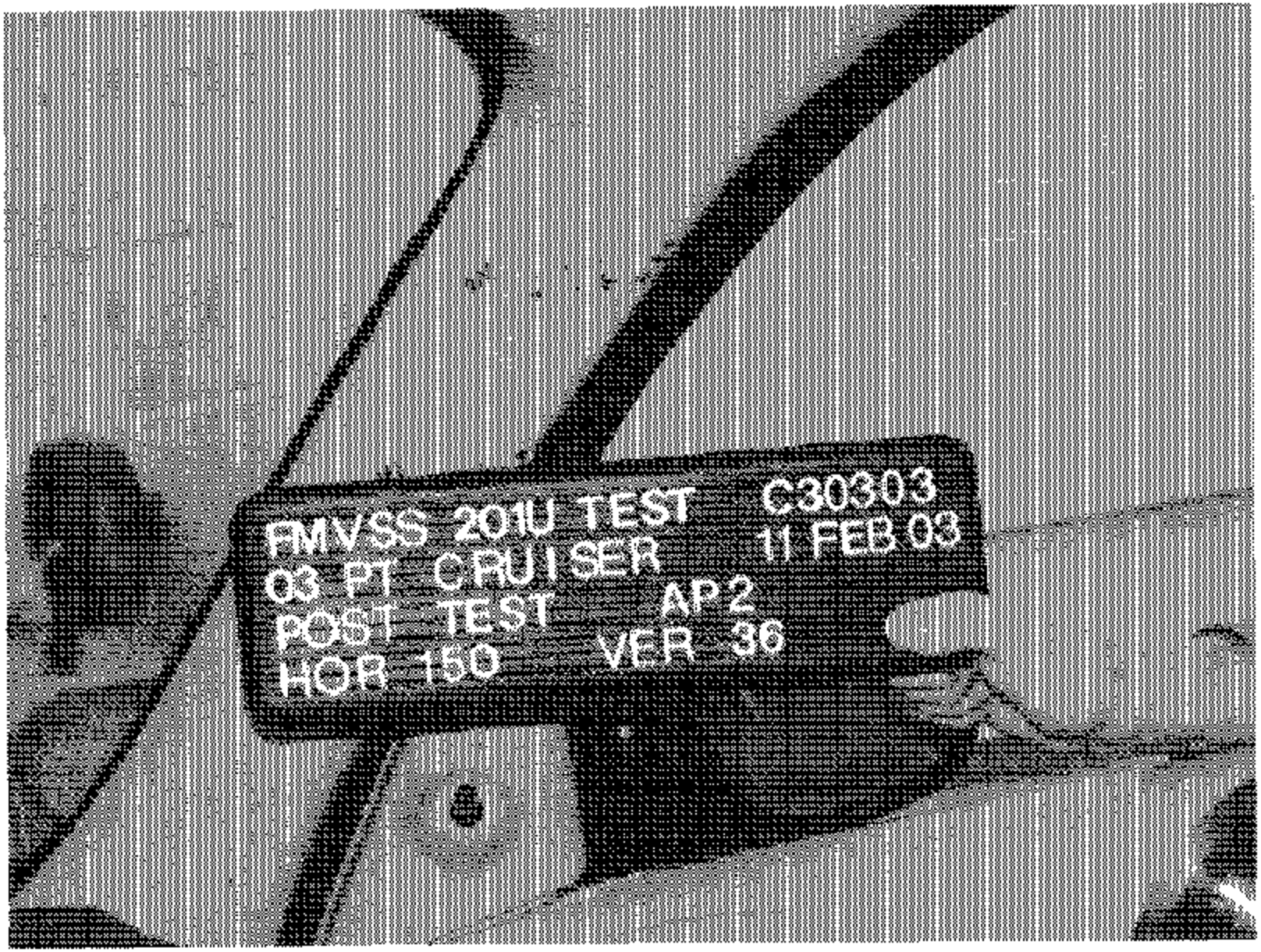


Figure 1. POST-TEST AP2

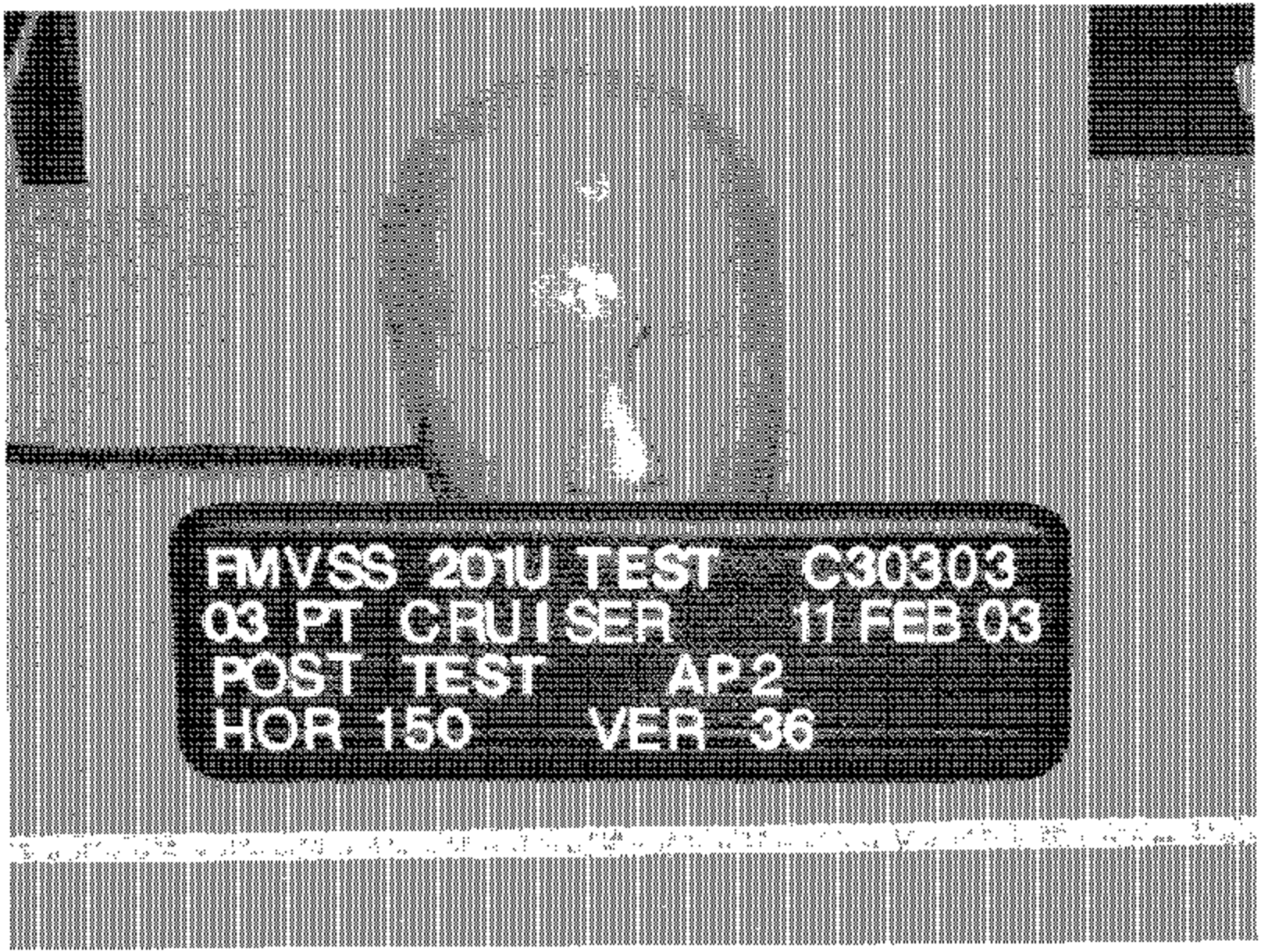


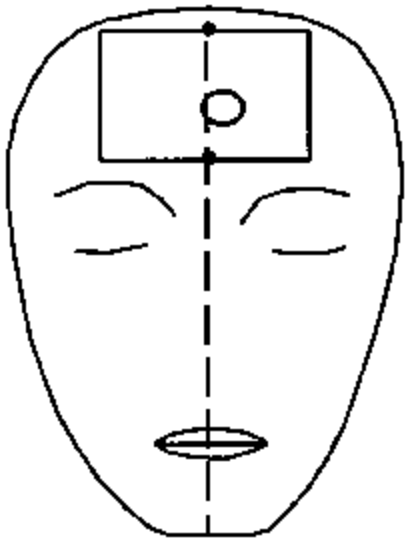
Figure AP2 HEADFORM

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	5	Test Date:	2/17/03
Target Location:	Side Rail	Target Code:	SR1
Horizontal Impact Angle:	90 °	Vertical Impact Angle:	37 °
Ambient Temperature:	20 °C	Time of Impact:	15:00
Headform Number:	805		

Impact Point:
Description:

Description:	From lower midpoint				
On centerline	18	mm up			
On centerline	4	-	mm right	x	mm left



Free Motion HIC:	538.5	HIC(d):	572.7		
Impact Velocity (kph):	23.62	HICT1	2.4 msec	HICT2	10.7 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - SR1

FMH Headform 805

Location: SR1

Test Date: February 11, 2003

Work File: SR1

----------TEST RESULTS----------

Lab Temperature: 20 C

Lab Humidity: 13 %

Velocity at Impact: 23.62 KPH

Free Flight Distance: 213.40 mm

HICd: 572.7

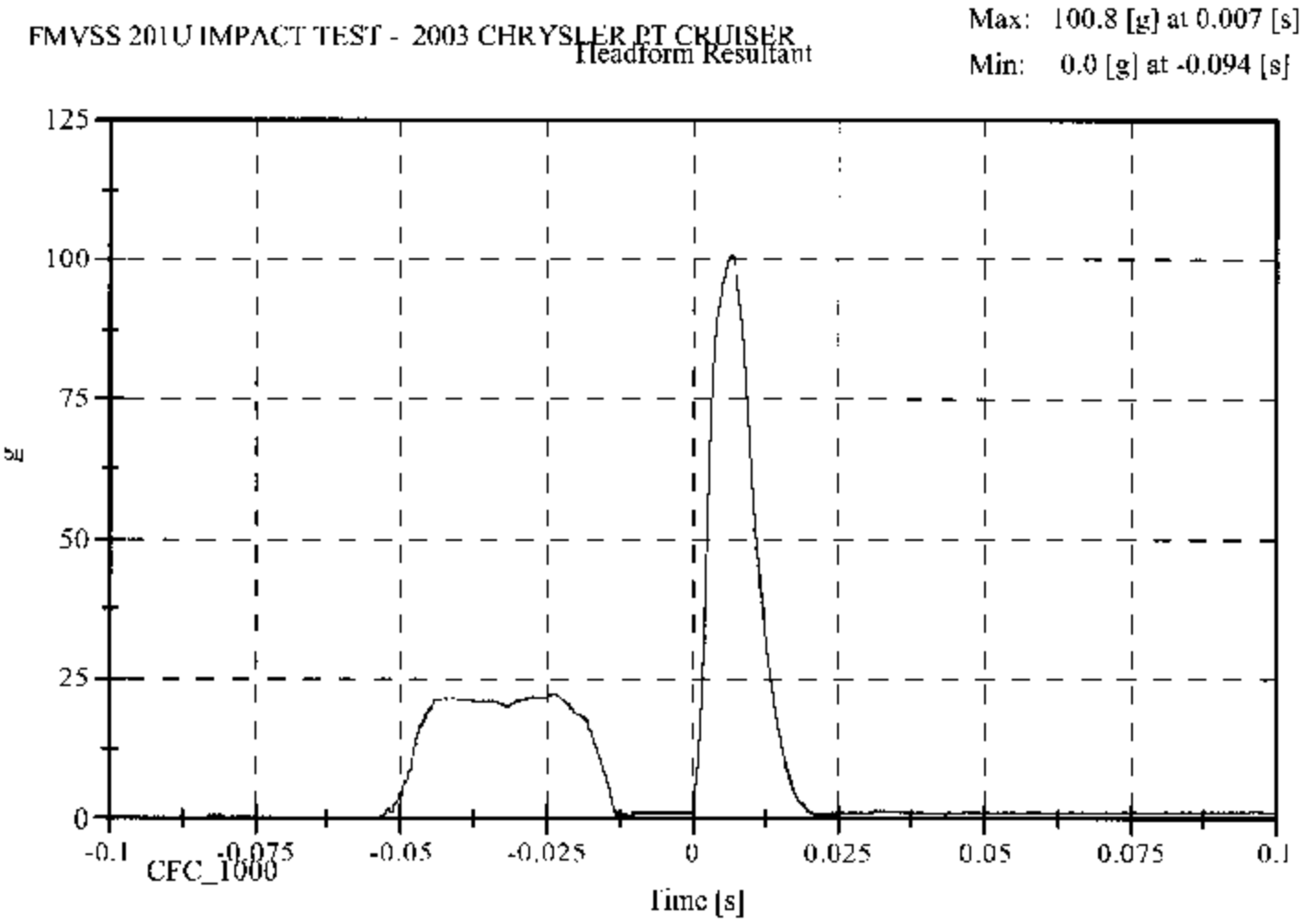
HIC (36ms): 538.5

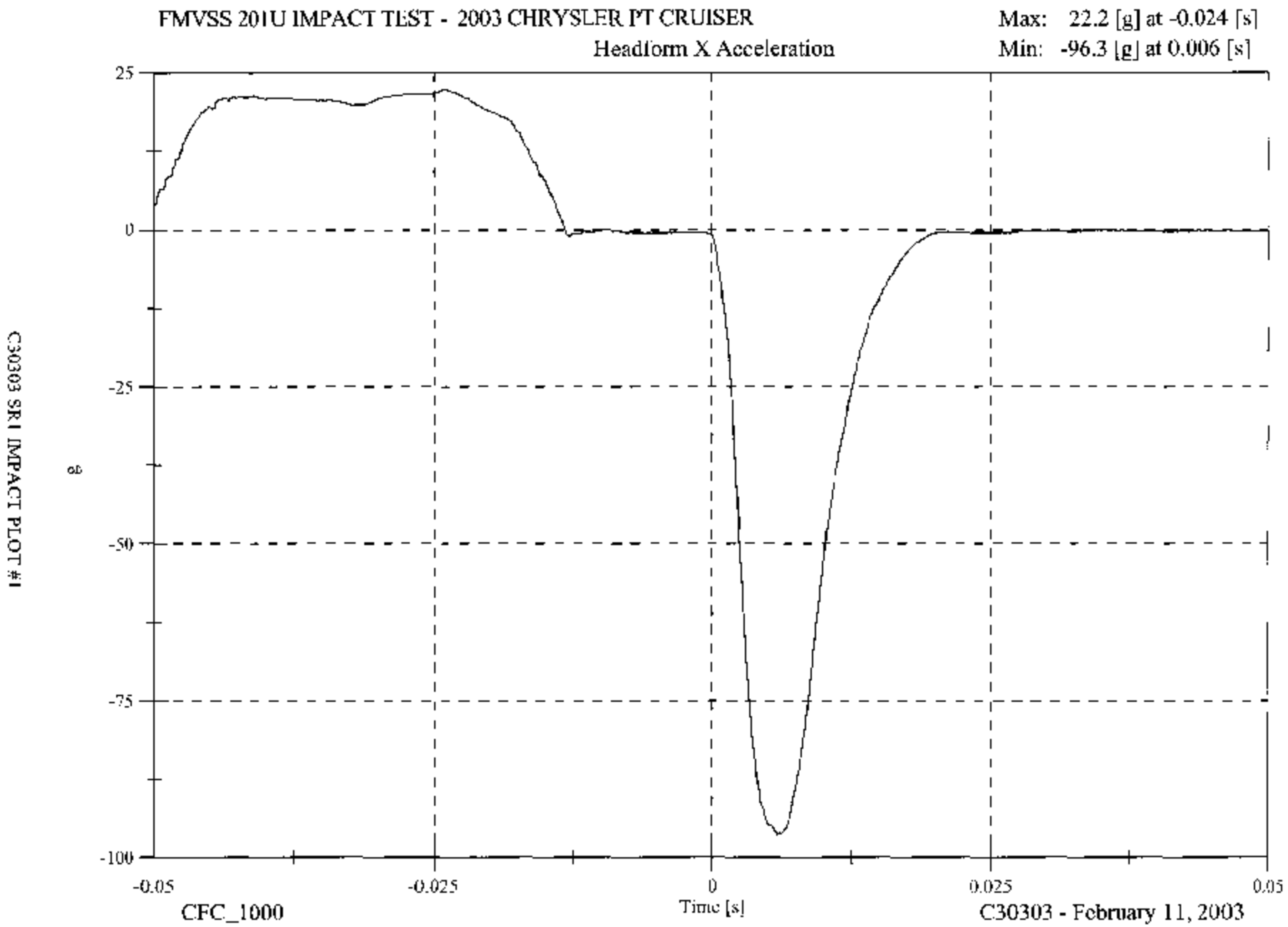
t1: 2.4 msec

t2: 10.7 msec

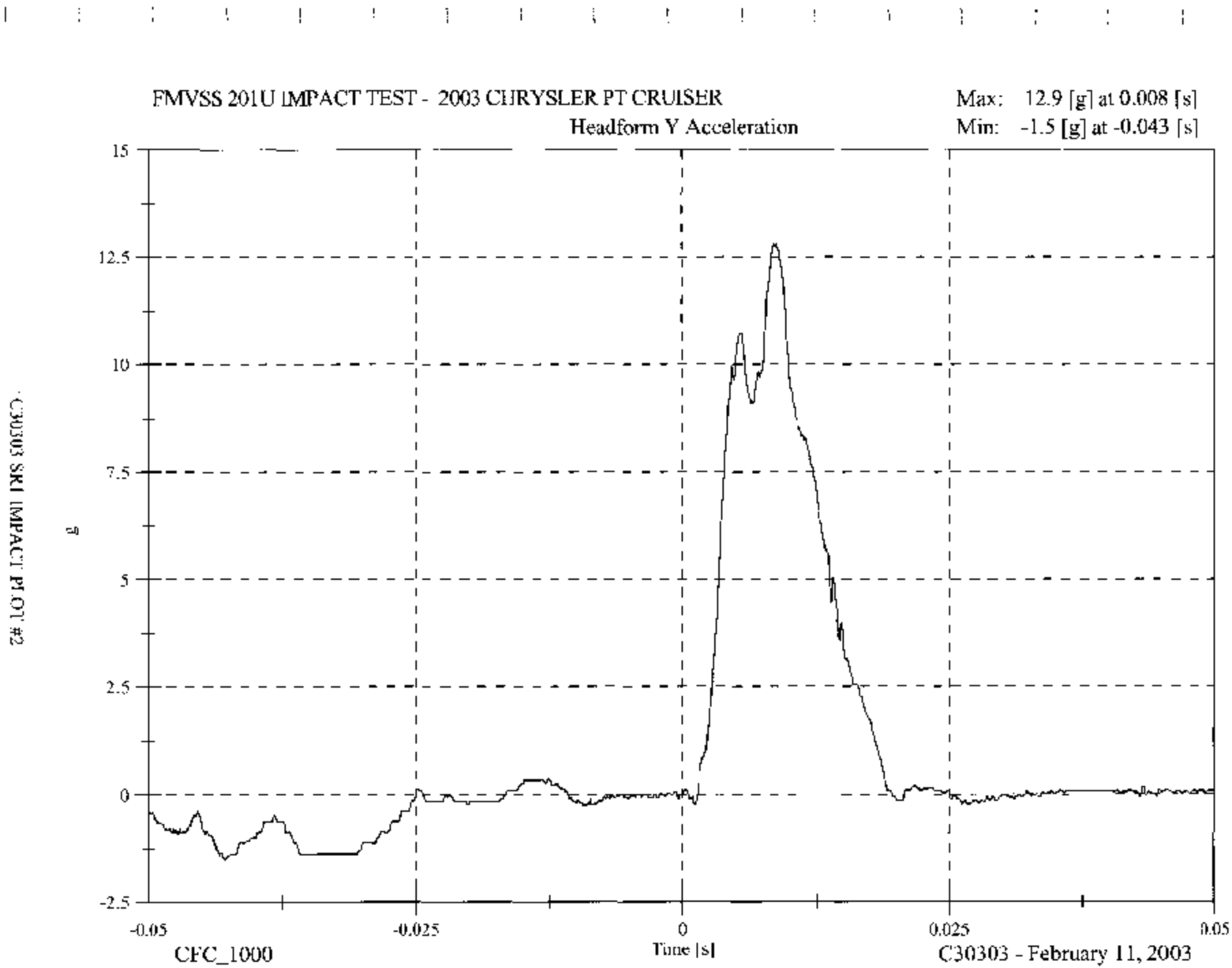
Duration: 8.3 msec

Average Acceleration: 8.5 g





C30303 SR1 IMPACT PLOT #1


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Y Acceleration
Max: 12.9 [g] at 0.008 [s]
Min: -1.5 [g] at -0.043 [s]
15
12.5
10
7.5
5
2.5
0
-2.5
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003
C30303 SRI IMPACT PLOT #2

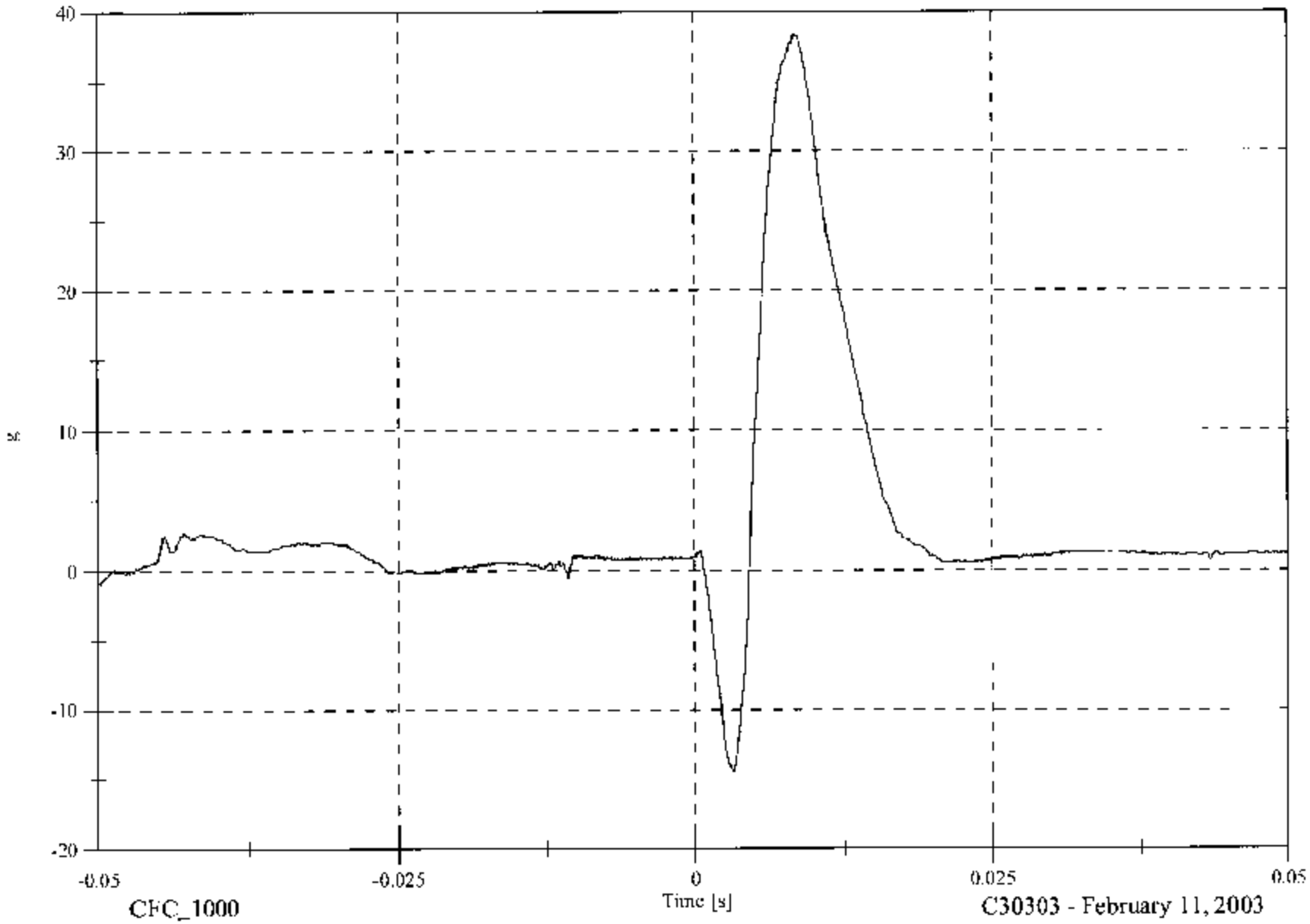
C30303 SR1 IMPACT PLOT #3

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER

Headform Z Acceleration

Max: 38.4 [g] at 0.008 [s]

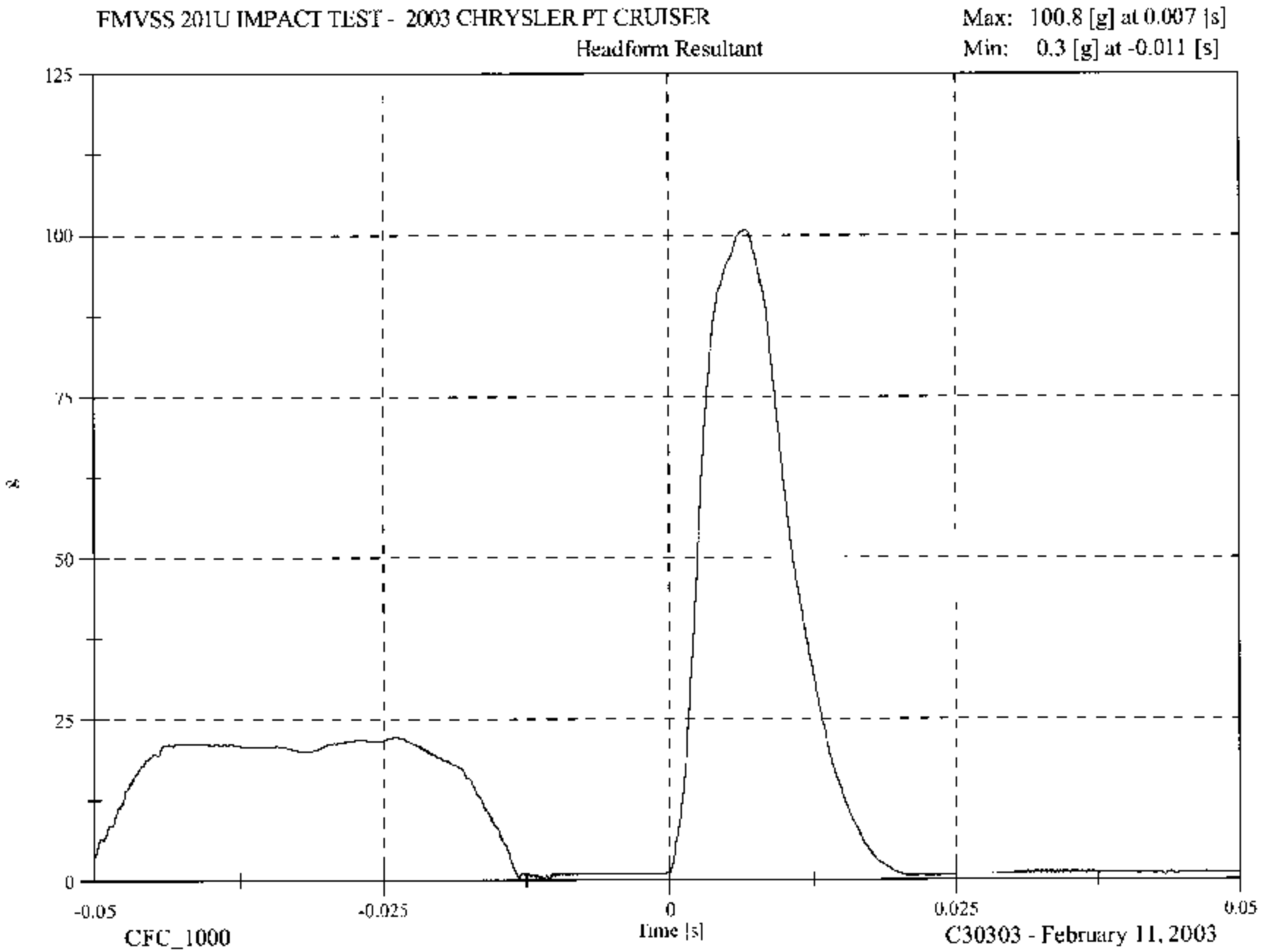
Min: -14.4 [g] at 0.003 [s]

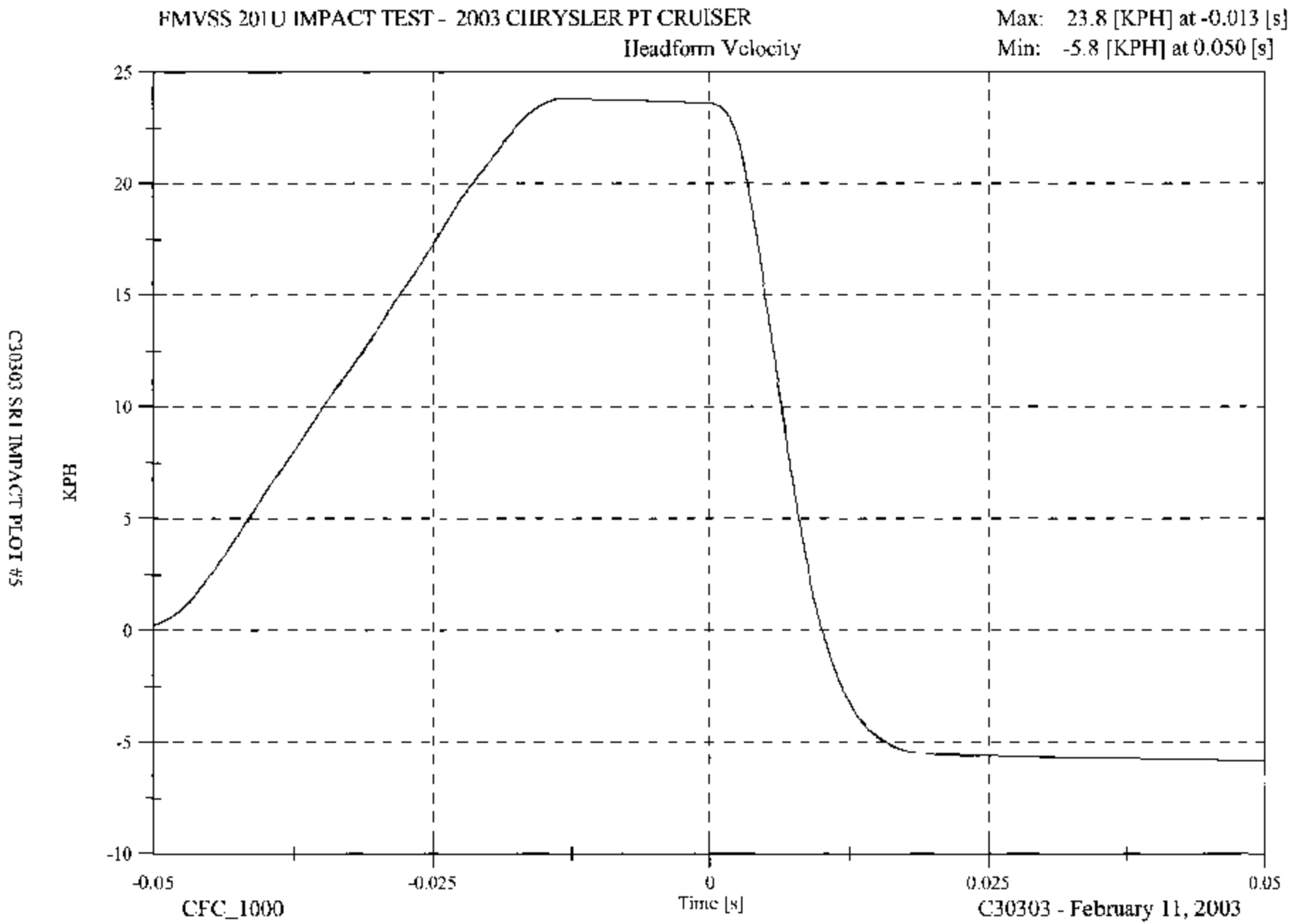


CFC_1000

C30303 - February 11, 2003

C30303 SR1 IMPACT PLOT #4




FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Velocity
Max: 23.8 [KPH] at -0.013 [s]
Min: -5.8 [KPH] at 0.050 [s]
C30303 SRI IMPACT PLOT #5
KPH
25
20
15
10
5
0
-5
-10
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 11, 2003

C30303 SRI IMPACT PLOT #6

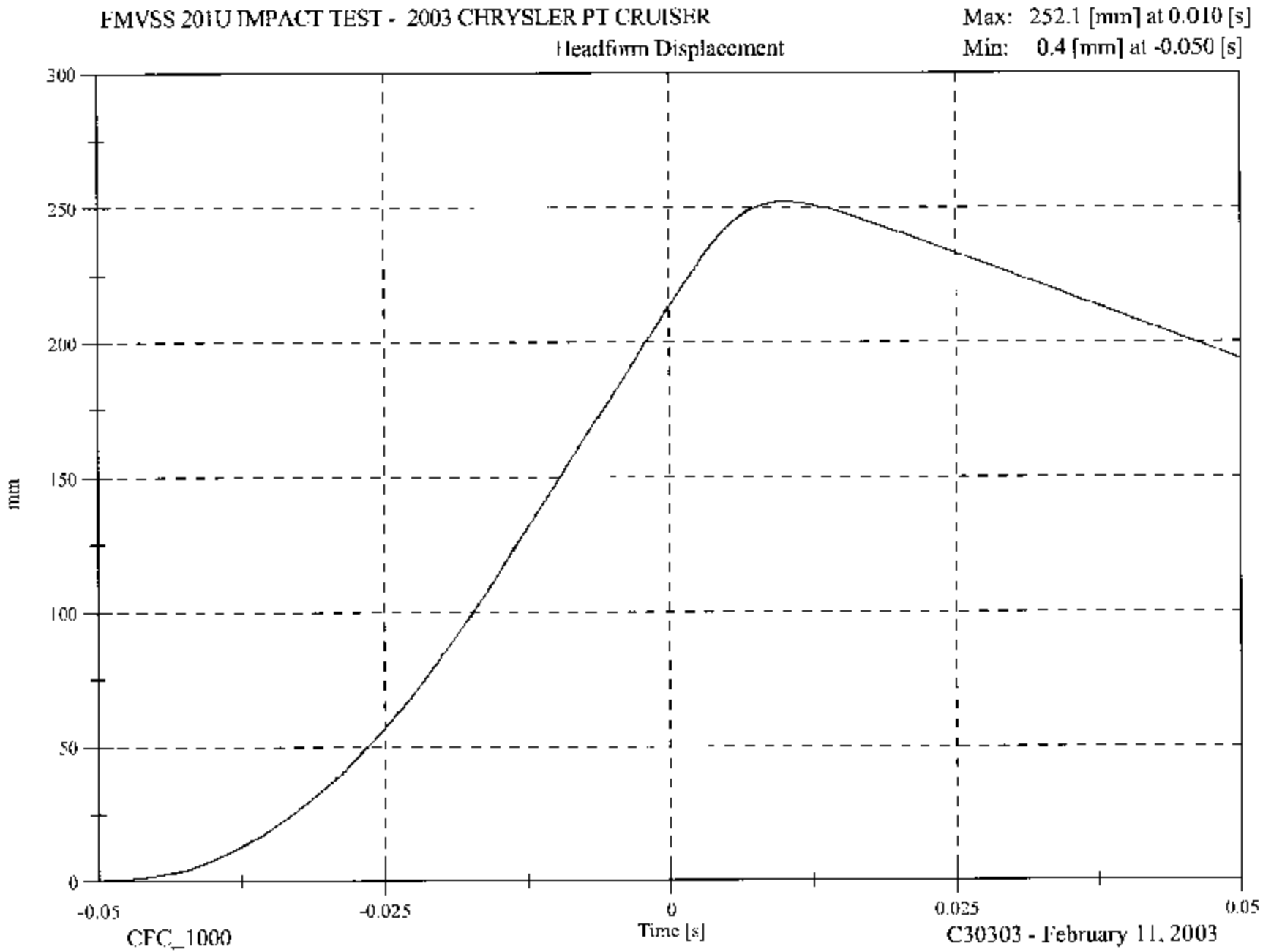


Figure - PRE-TEST SN1

Figure - POST TEST SR1

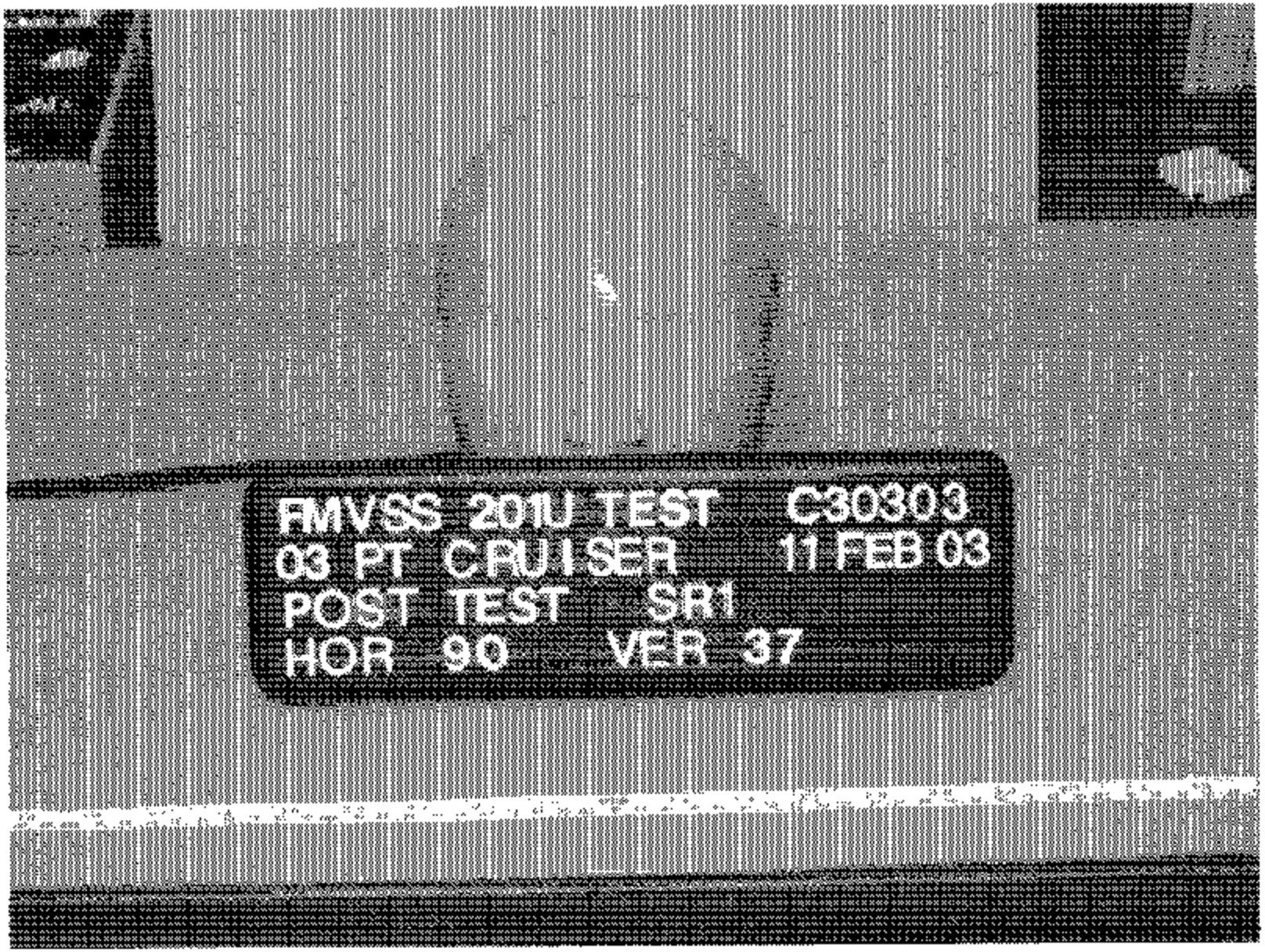


Figure 1 SR1 HEADFORM

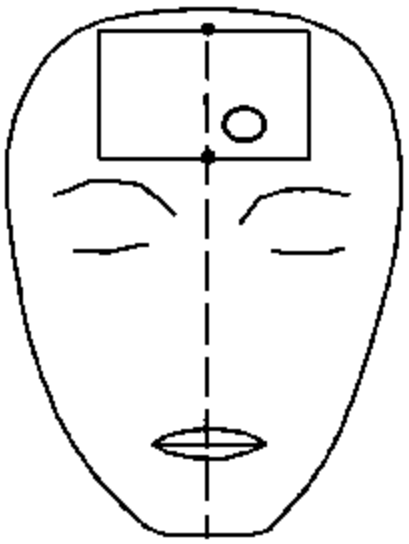
05 HWY 599

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	6	Test Date:	2/12/03
Target Location:	A-pillar	Target Code:	AP3
Horizontal Impact Angle:	203 °	Vertical Impact Angle:	35 °
Ambient Temperature:	22 °C	Time of Impact:	11:05
Headform Number:	0355		

Impact Point:
Description:

Description:	From lower midpoint				
On centerline	15	mm up			
On centerline	10	-	mm right	x	mm left



Free Motion HIC:	386.0	HIC(d):	457.7		
Impact Velocity (kph):	23.47	HICT1	2.6 msec	HICT2	12.8 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - AP3

FMH Headform 0355

Location: AP3

Test Date: February 12, 2003

Work File: AP3

----------TEST RESULTS----------

Lab Temperature: 22 C

Lab Humidity: 13 %

Velocity at Impact: 23.47 KPH

Free Flight Distance: 214.75 mm

HICd: 457.7

HIC (36ms): 386.0

t1: 2.6 msec

t2: 12.8 msec

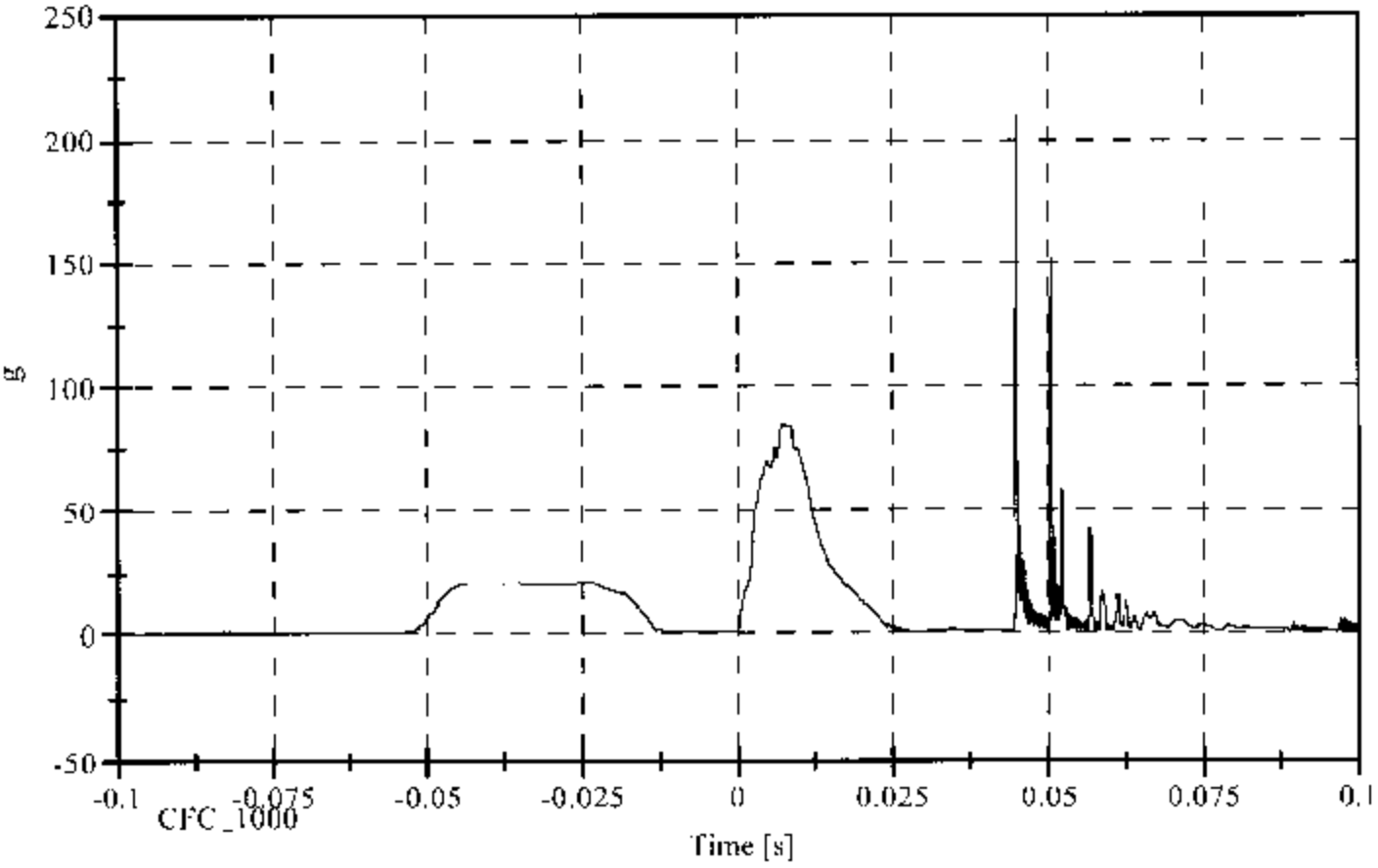
Duration: 10.2 msec

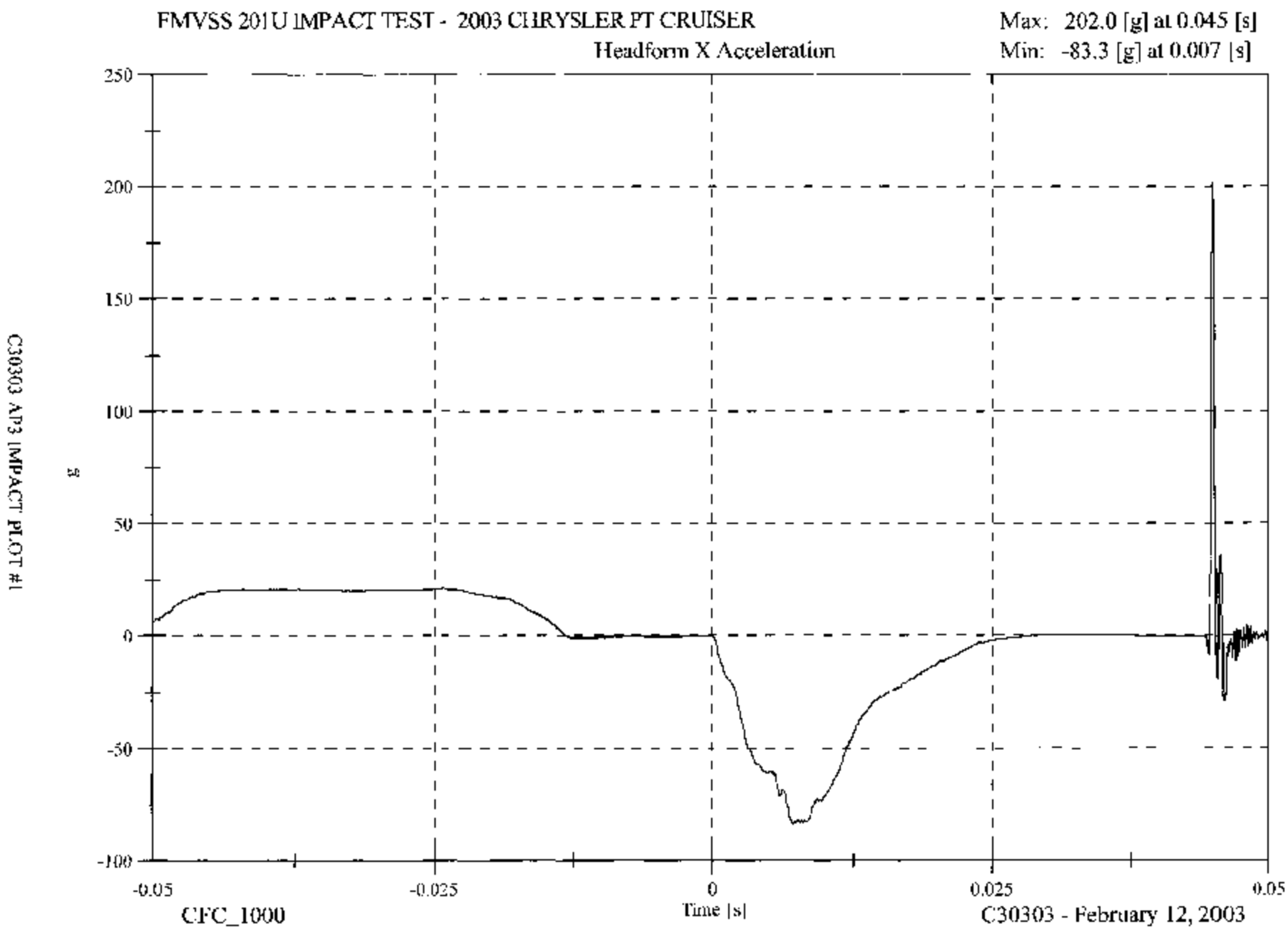
Average Acceleration: 10.1 g

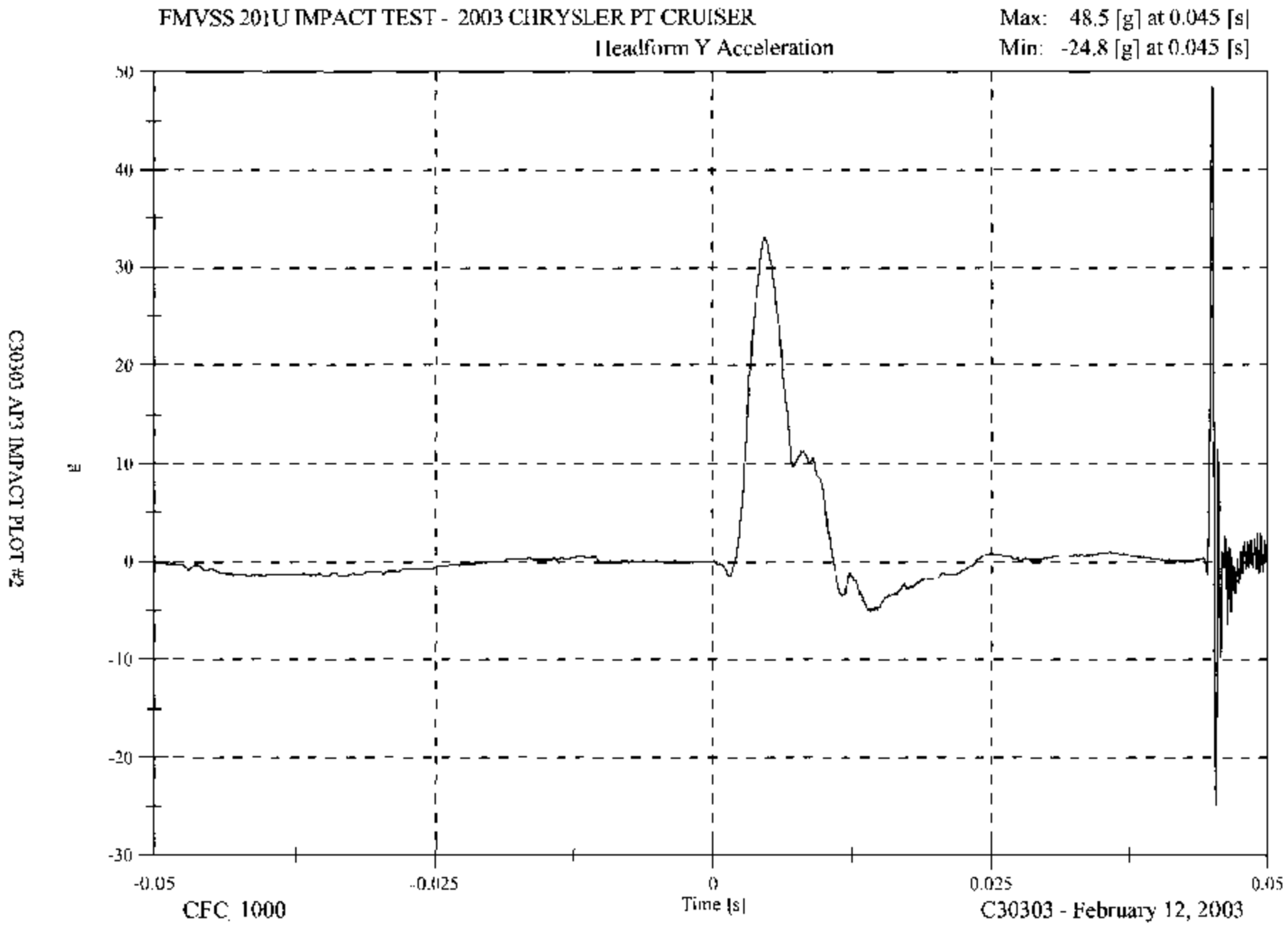
FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Resultant

Max: 209.2 [g] at 0.045 [s]

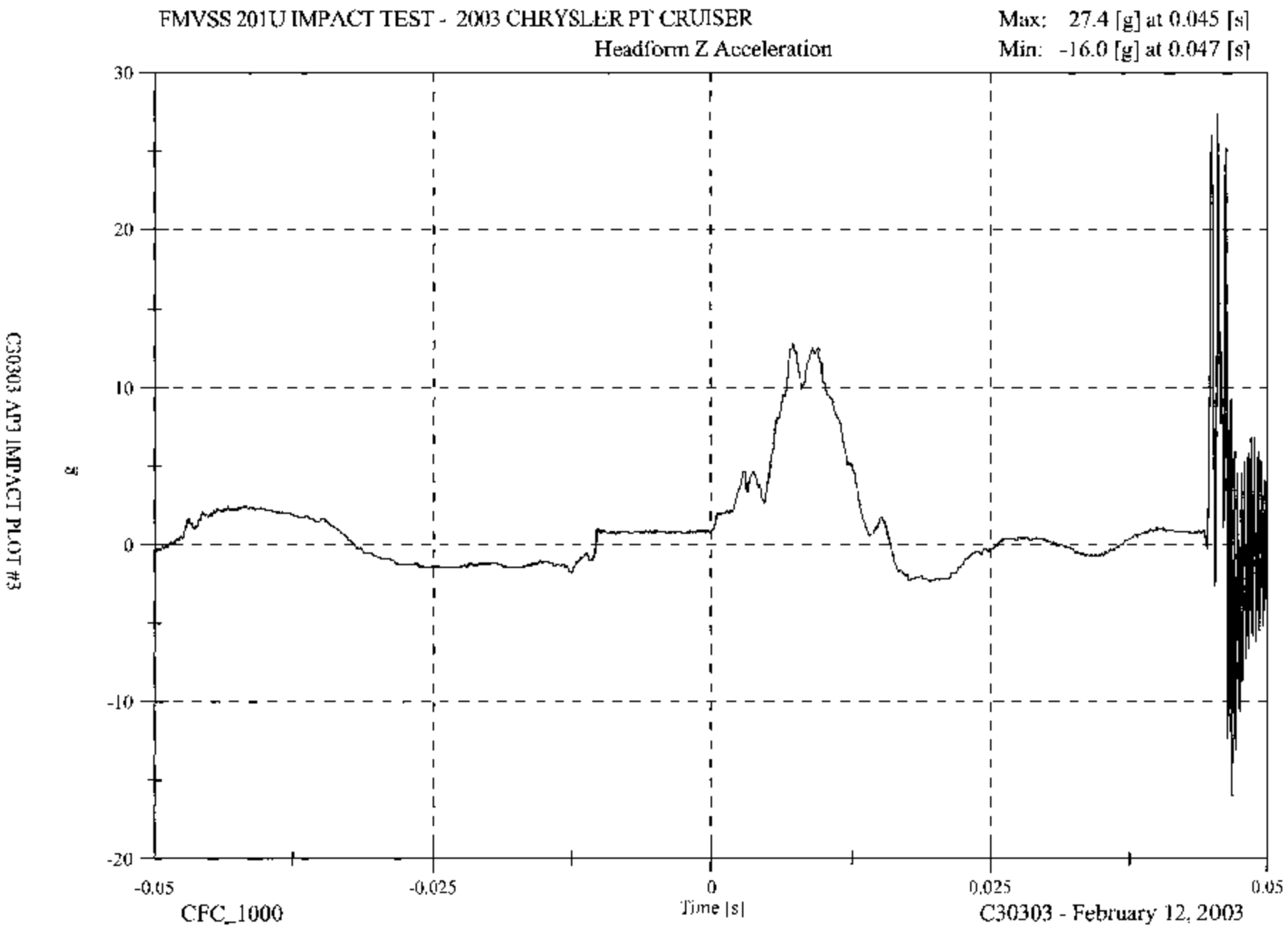
Min: -0.0 [g] at -0.099 [s]

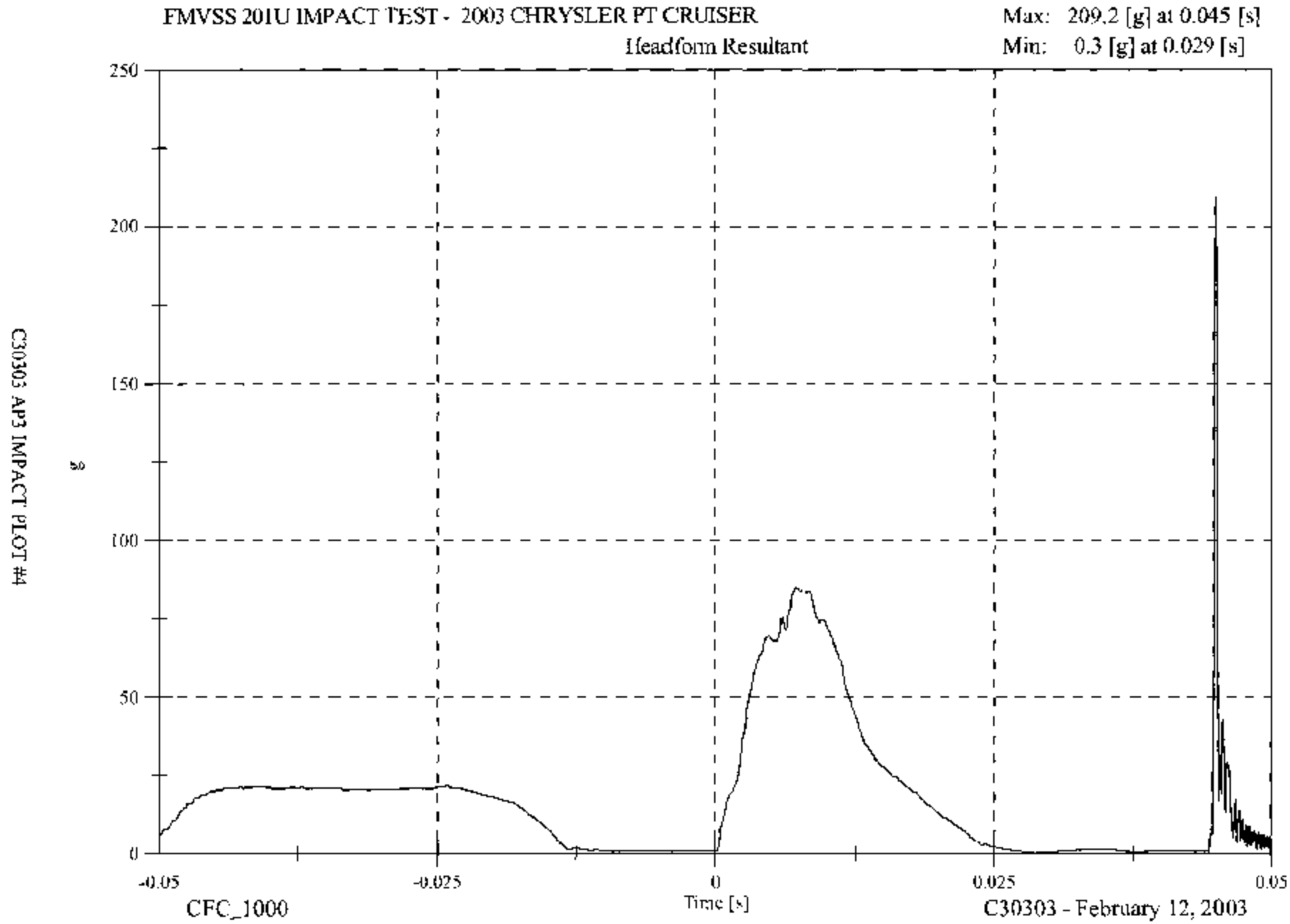



FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform X Acceleration
Max: 202.0 [g] at 0.045 [s]
Min: -83.3 [g] at 0.007 [s]
250
200
150
100
50
0
-50
-100
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 AP3 IMPACT PLOT #1

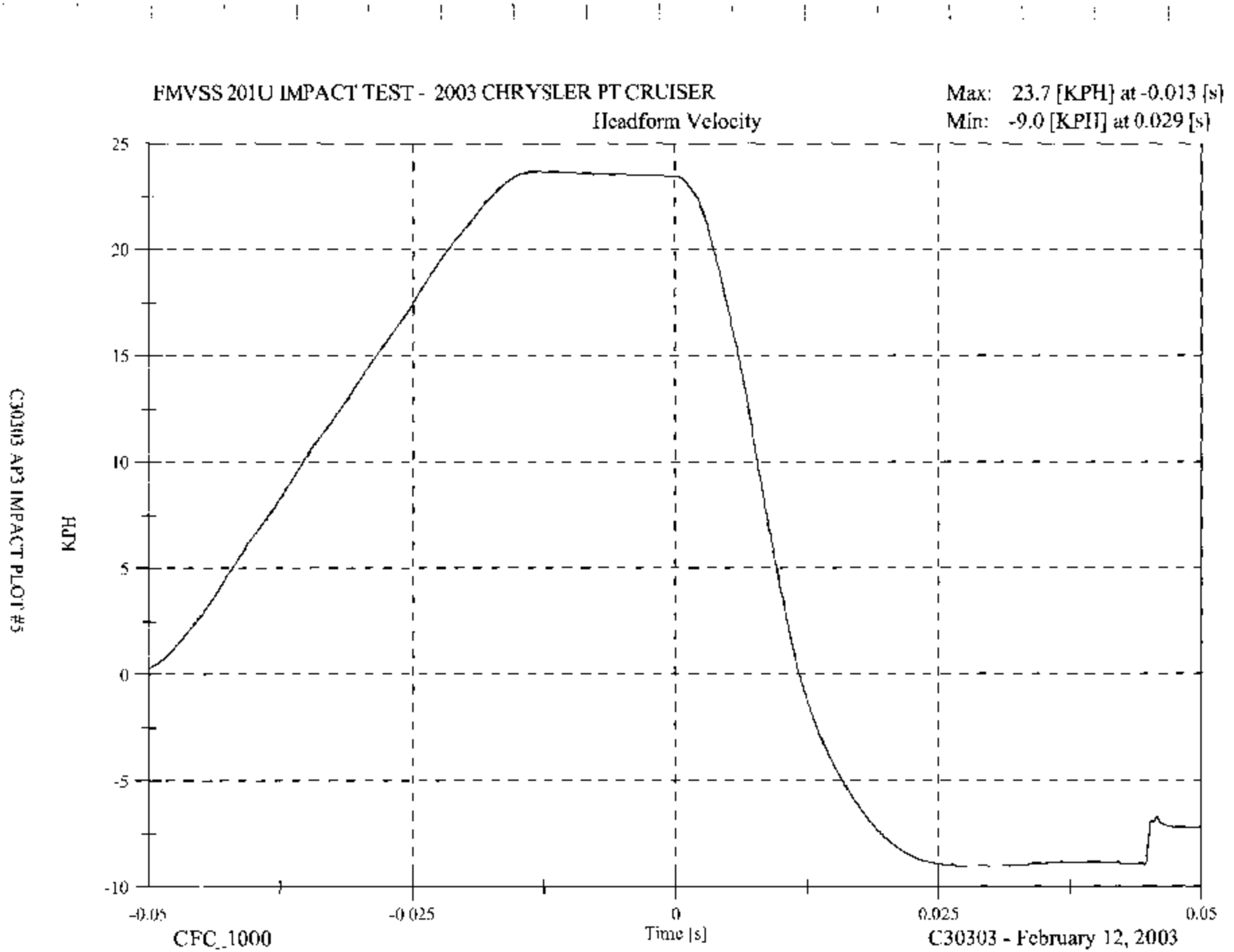


C30303 AP3 IMPACT PLOT #2


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Z Acceleration
Max: 27.4 [g] at 0.045 [s]
Min: -16.0 [g] at 0.047 [s]
C30303 AP3 IMPACT PLOT #3
g
30
20
10
0
-10
-20
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003



C30303 AP3 IMPACT PLOT #4


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Velocity
Max: 23.7 [KPH] at -0.013 [s]
Min: -9.0 [KPH] at 0.029 [s]
C30303 AP3 IMPACT PLOT #5
KPH
25
20
15
10
5
0
-5
-10
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003

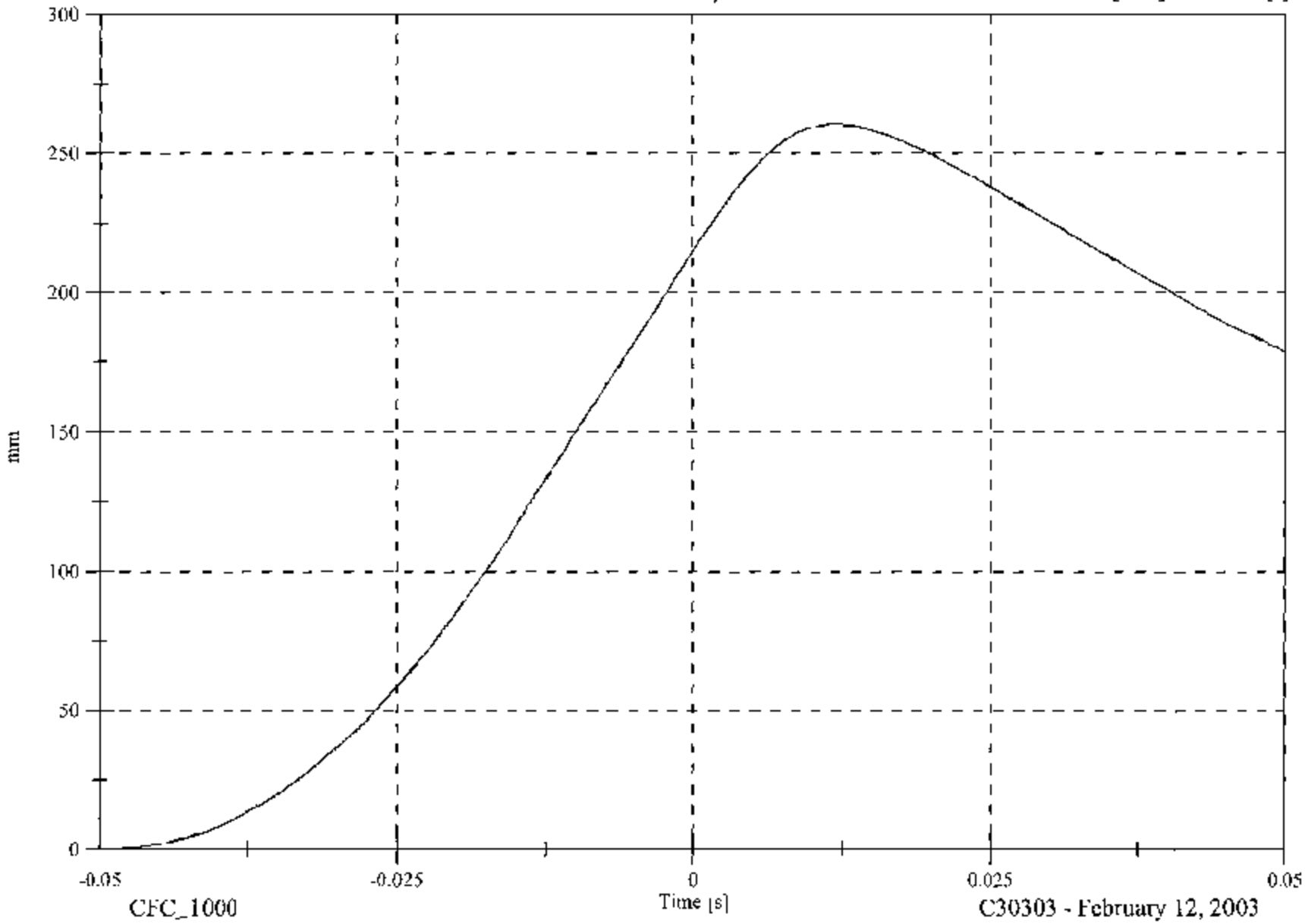
C30303 AP3 IMPACT PLOT #6

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER

Headform Displacement

Max: 260.3 [mm] at 0.012 [s]

Min: 0.1 [mm] at -0.050 [s]



CFC_1000

C30303 - February 12, 2003

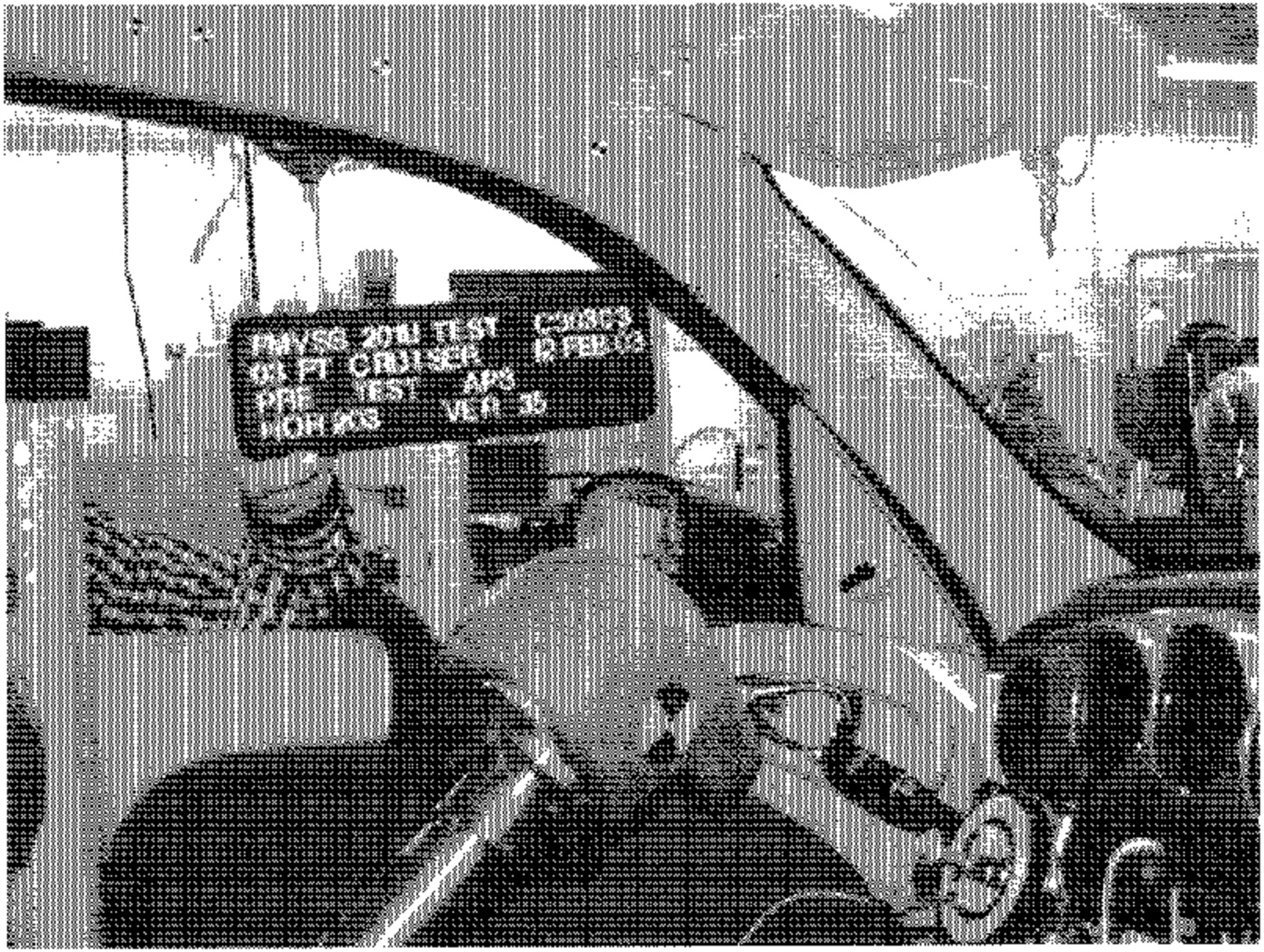


Figure PRE-TEST APS

Figure . POST-TEST APT

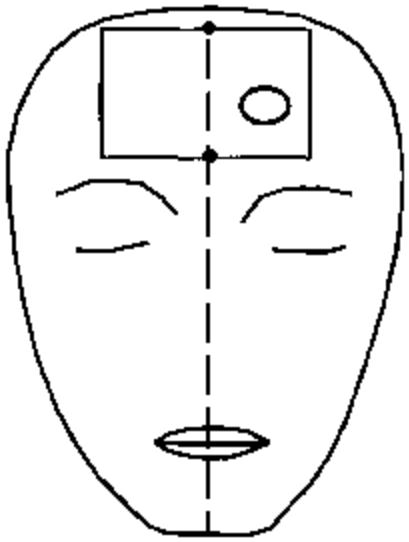
8653-FMH-10

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	7	Test Date:	2/12/03
Target Location:	A-pillar	Target Code:	AP1
Horizontal Impact Angle:	212 °	Vertical Impact Angle:	26 °
Ambient Temperature:	22 °C	Time of Impact:	11:45
Headform Number:	0062		

Impact Point:
Description:

Description:	From lower midpoint				
On centerline	19	mm up			
On centerline	24	-	mm right	x	mm left



Free Motion HIC:	523.9	HIC(d):	561.6		
Impact Velocity (kph):	23.45	HICT1	4.2 msec	HICT2	13.8 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - AP1

FMH Headform 0062

Location: AP1

Test Date: February 12, 2003

Work File: AP1

----------TEST RESULTS----------

Lab Temperature: 22 C

Lab Humidity: 13 %

Velocity at Impact: 23.45 KPH

Free Flight Distance: 215.01 mm

HICd: 561.6

HIC (36ms): 523.9

t1: 4.2 msec

t2: 13.8 msec

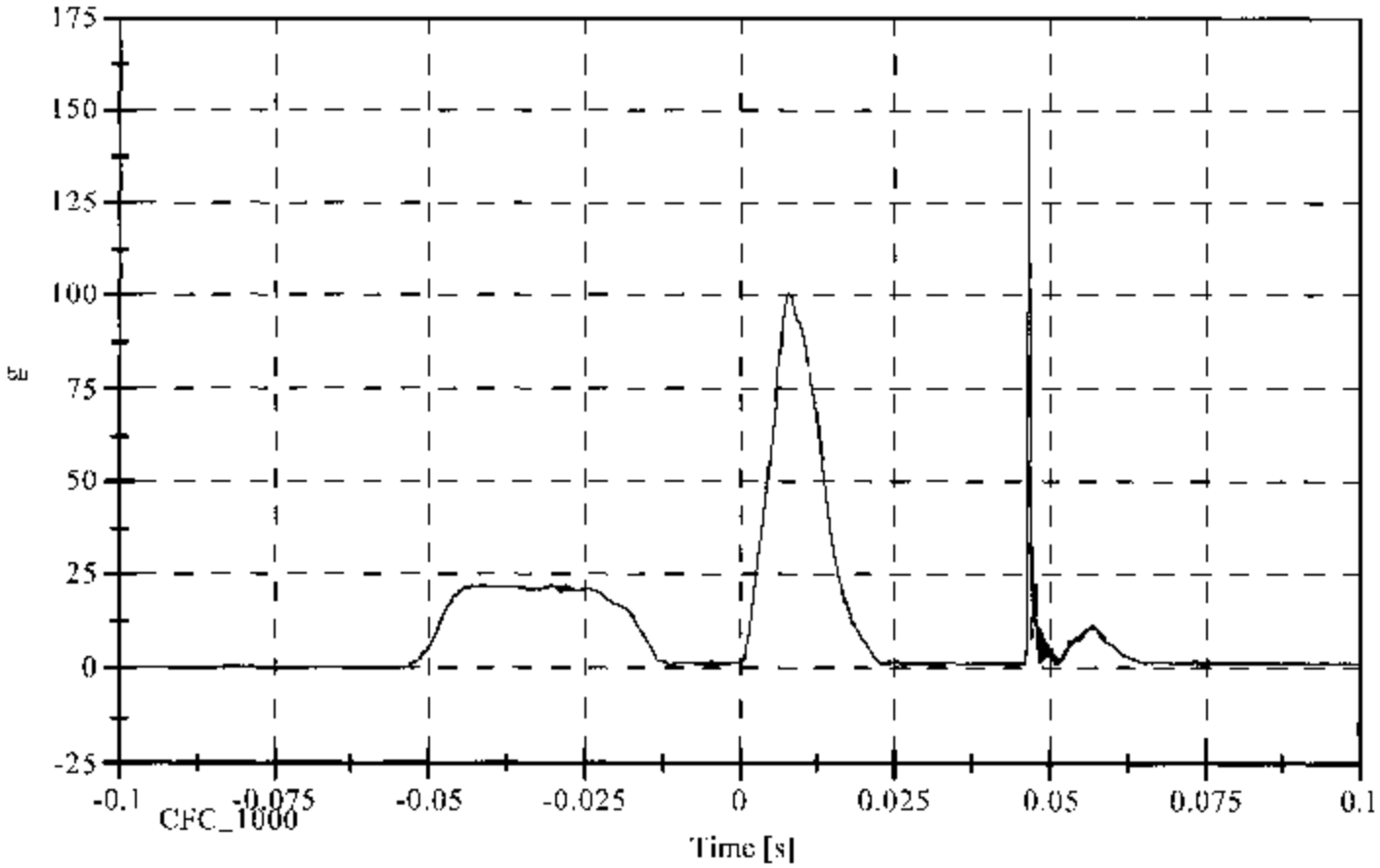
Duration: 9.6 msec

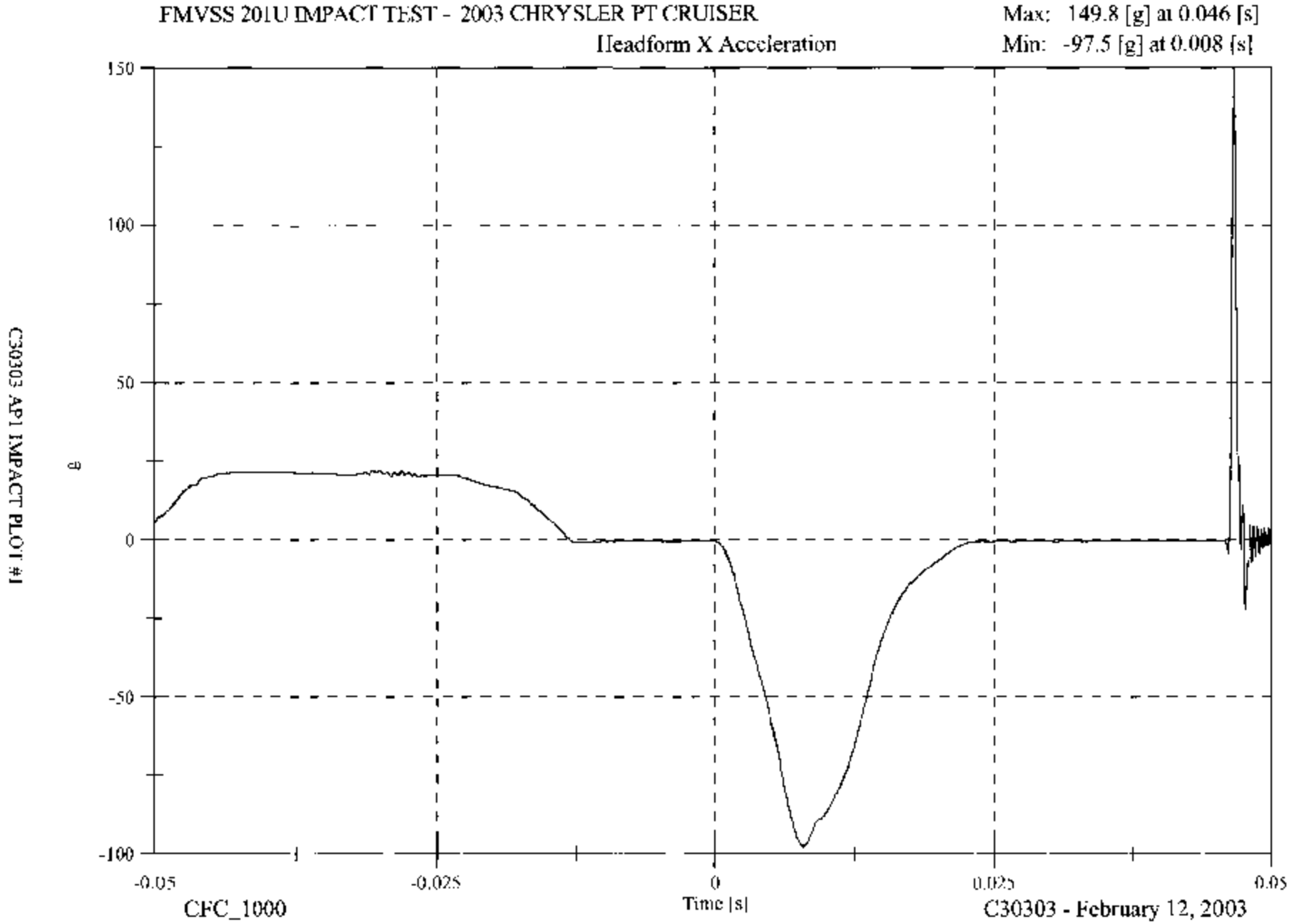
Average Acceleration: 9.7 g

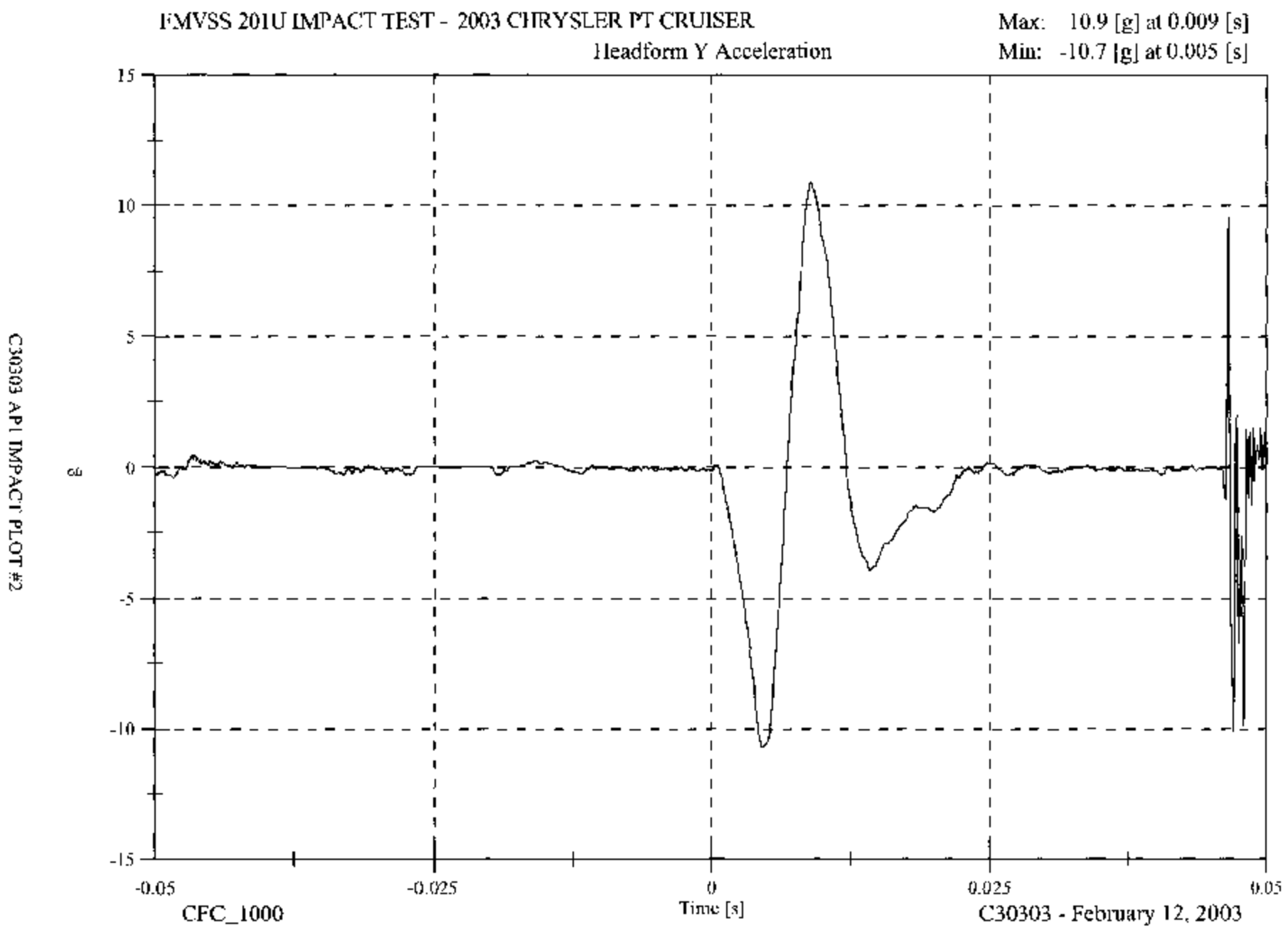
FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Resultant

Max: 150.4 [g] at 0.046 [s]

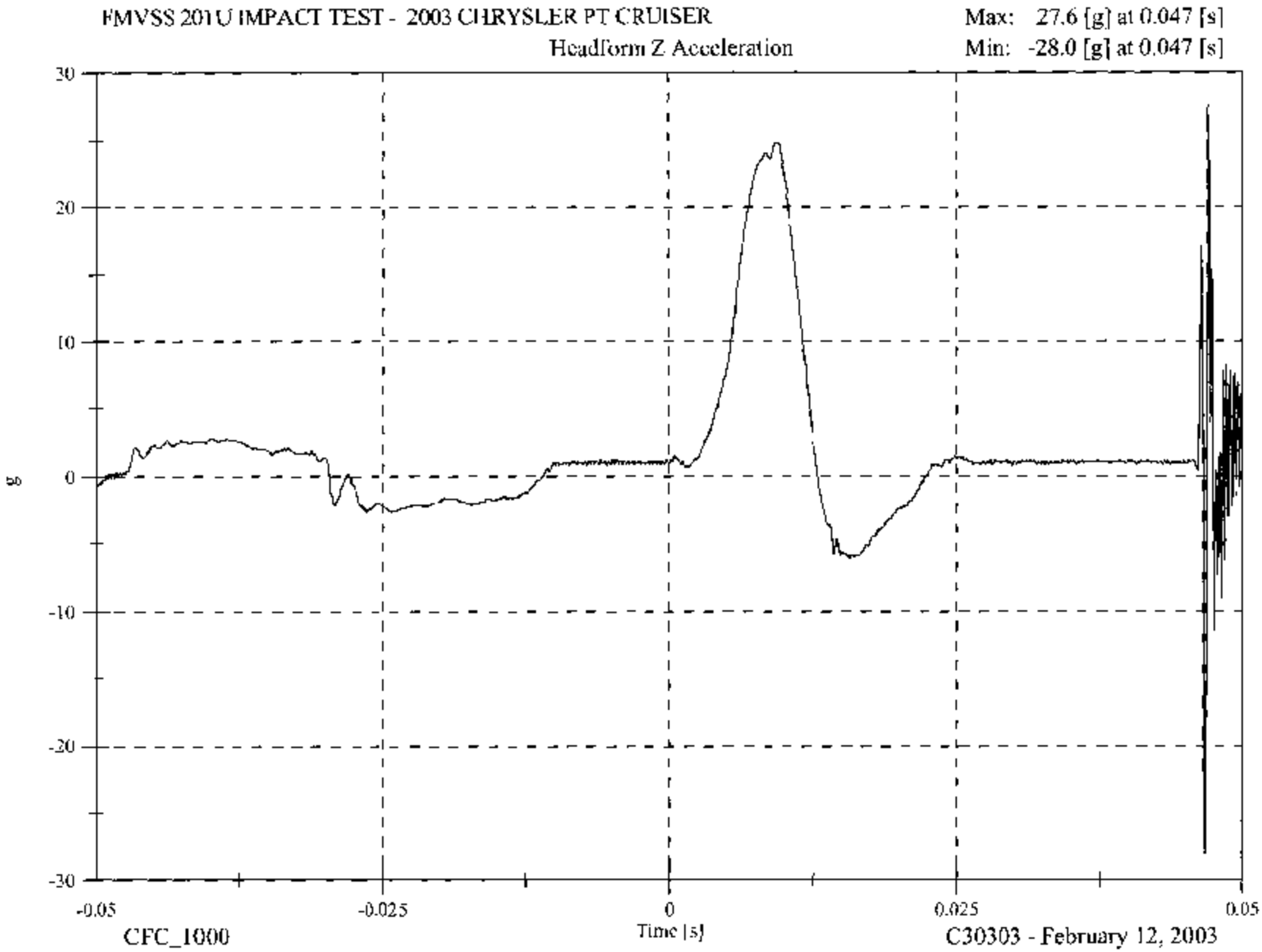
Min: -0.0 [g] at -0.099 [s]

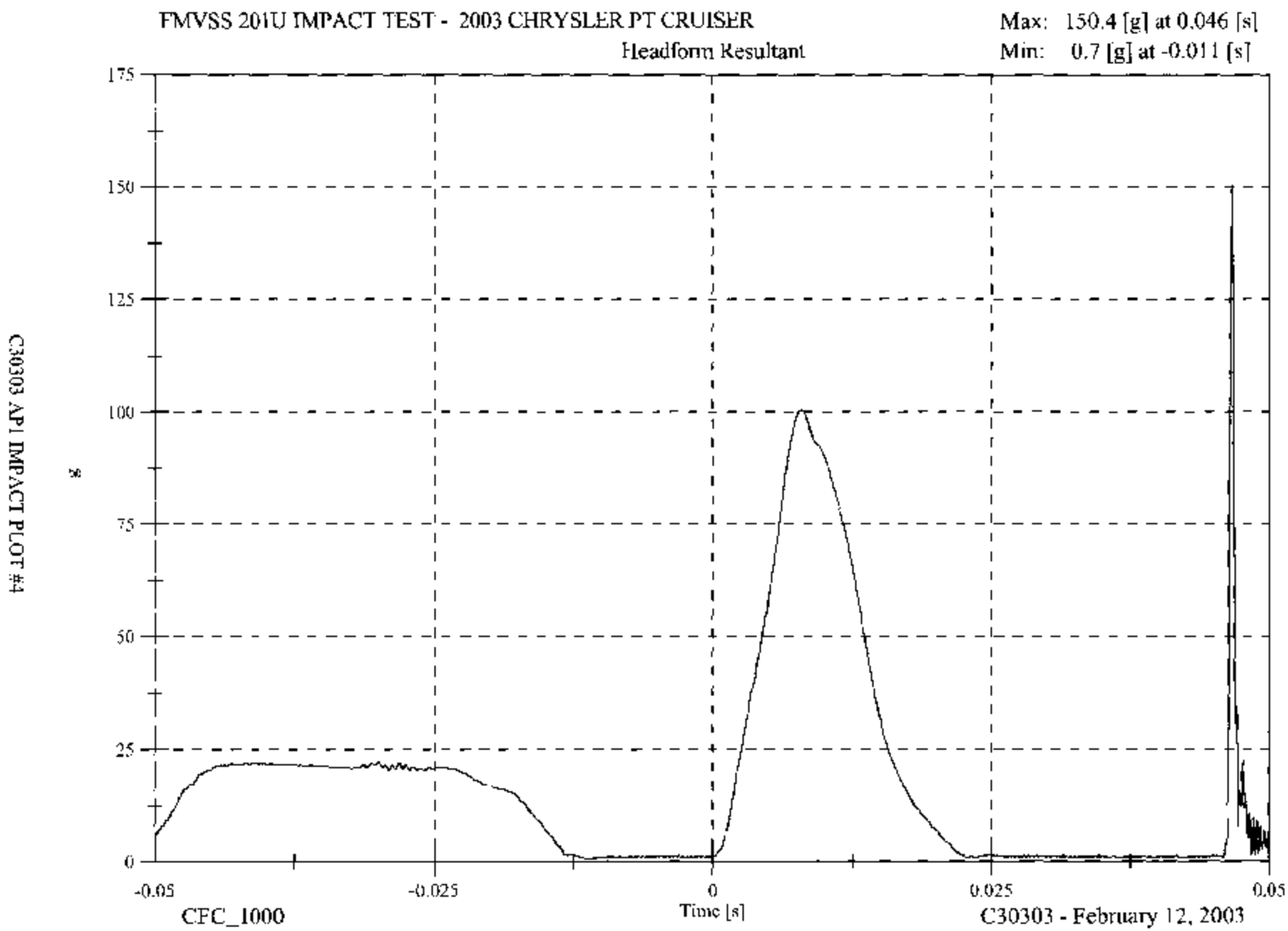


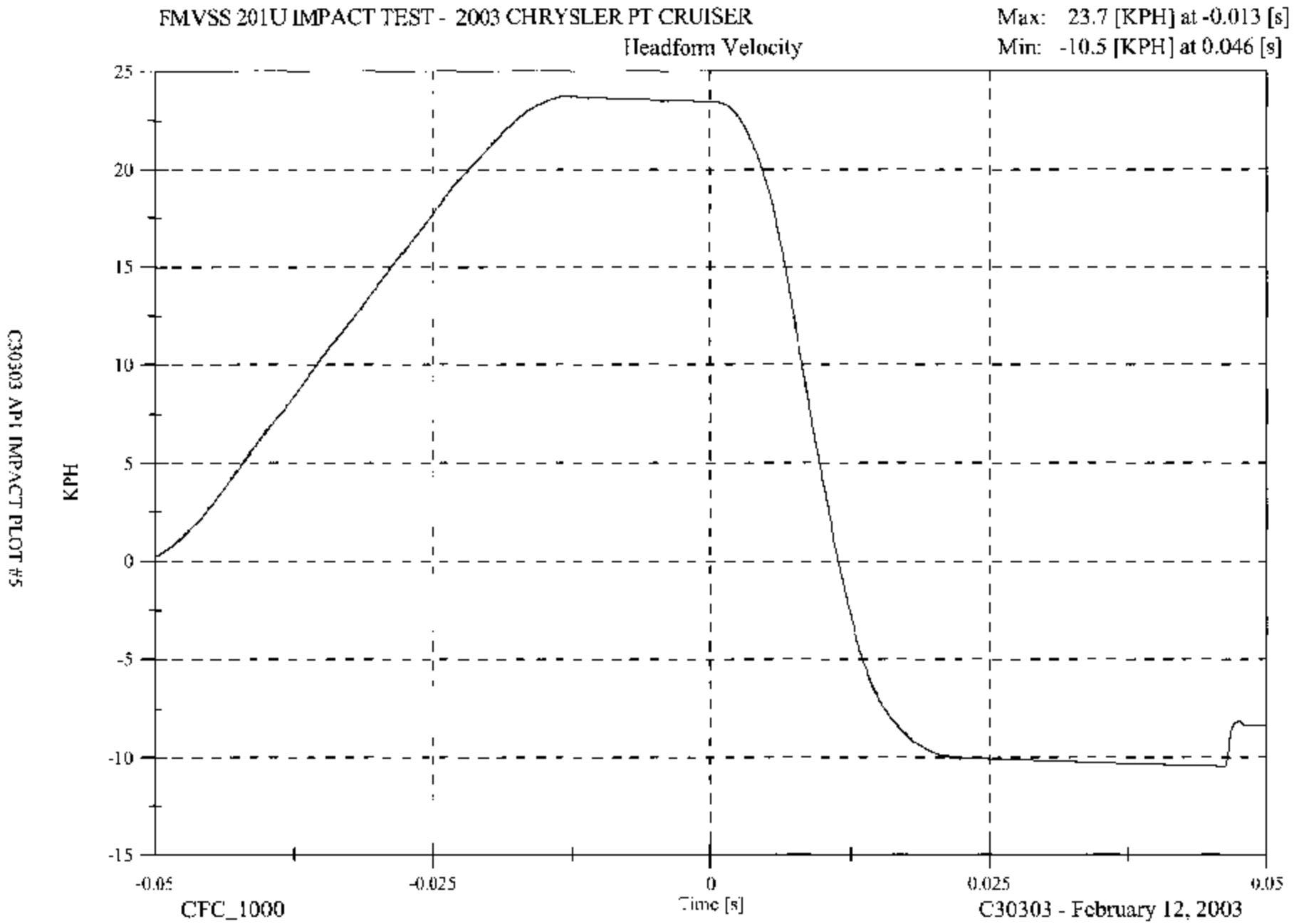

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform X Acceleration
Max: 149.8 [g] at 0.046 [s]
Min: -97.5 [g] at 0.008 [s]
150
100
50
0
-50
-100
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 AP1 IMPACT PLOT #1

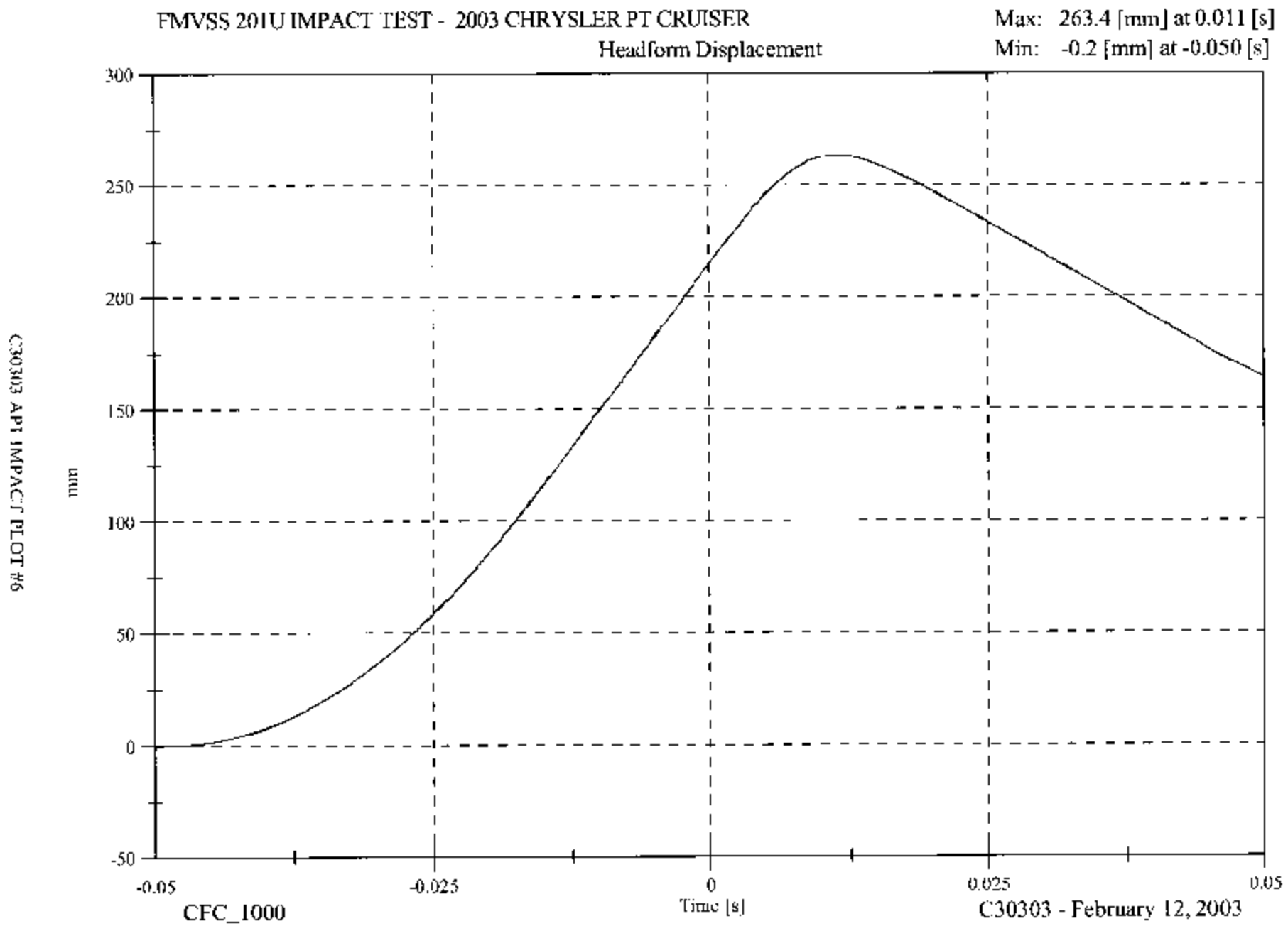

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Y Acceleration
Max: 10.9 [g] at 0.009 [s]
Min: -10.7 [g] at 0.005 [s]
15
10
5
0
-5
-10
-15
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 API IMPACT PLOT #2

C30303 API IMPACT PLOT #3




FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Resultant
Max: 150.4 [g] at 0.046 [s]
Min: 0.7 [g] at -0.011 [s]
175
150
125
100
75
50
25
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 AP1 IMPACT PLOT #4


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Velocity
Max: 23.7 [KPH] at -0.013 [s]
Min: -10.5 [KPH] at 0.046 [s]
C30303 API IMPACT PLOT #5
KPH
25
20
15
10
5
0
-5
-10
-15
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003



C30303 API IMPACT PLOT #6

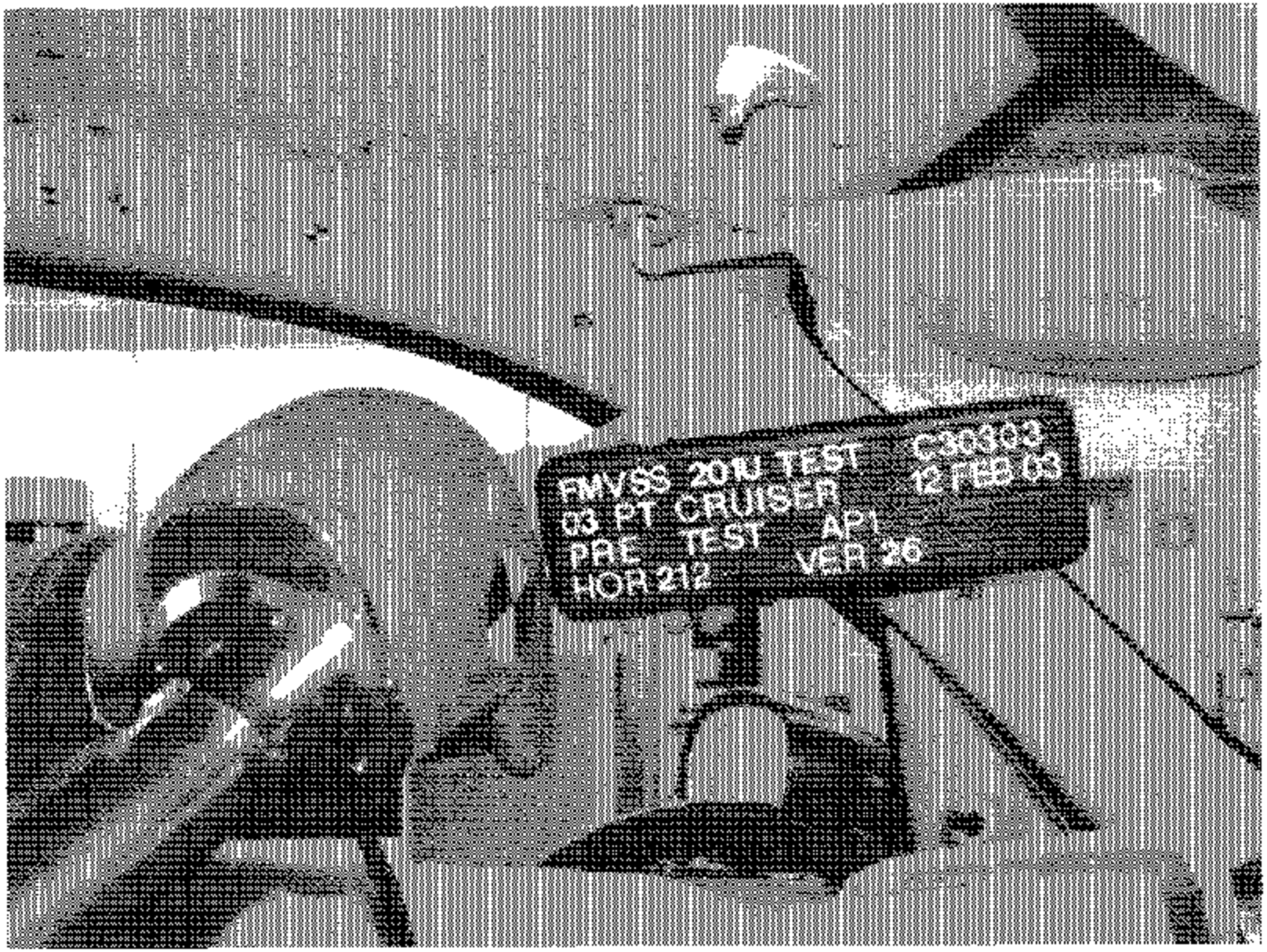


Figure PRE-TEST AP1

8653-FMH-10

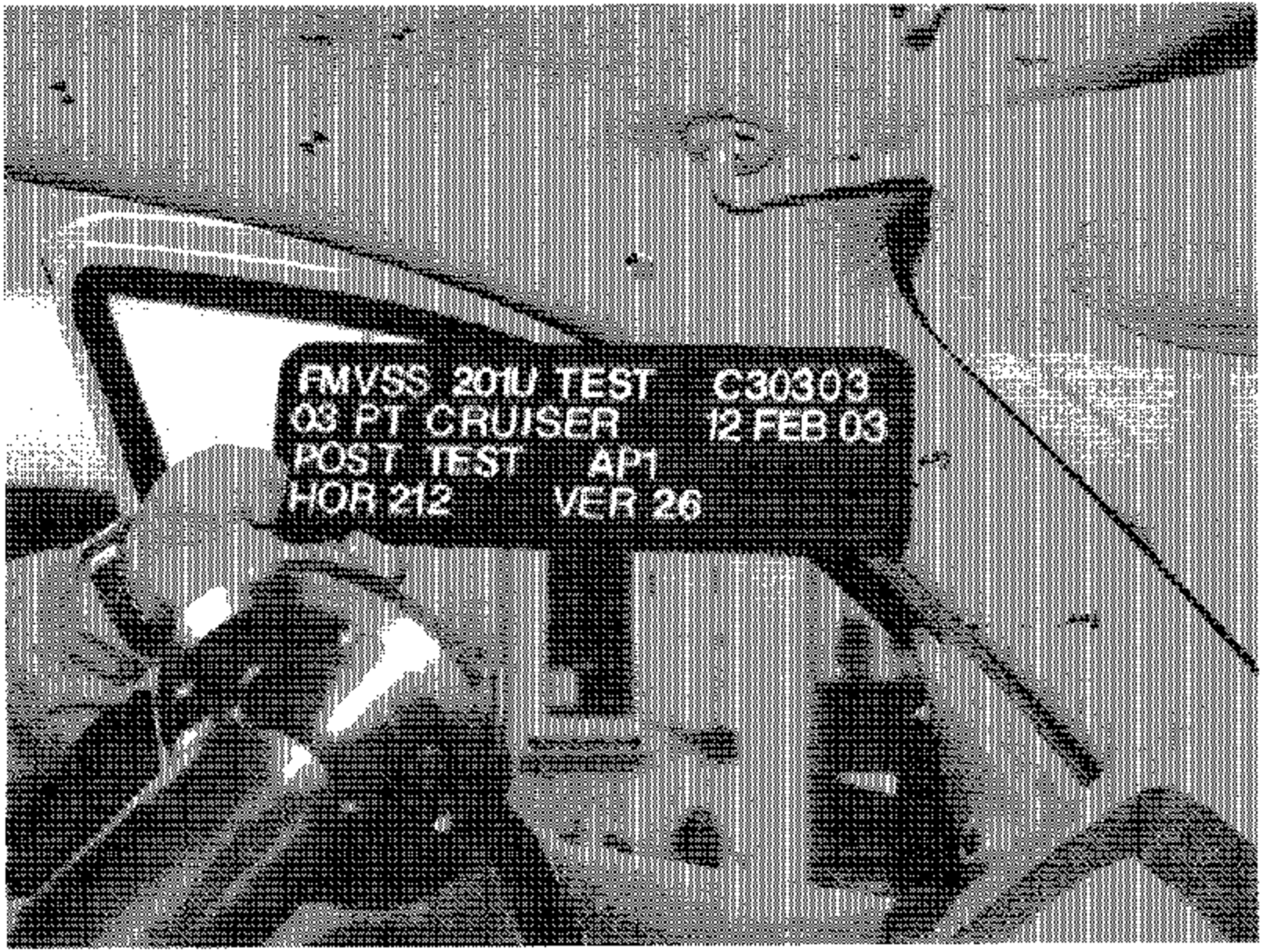


Figure : POST-TEST AP1

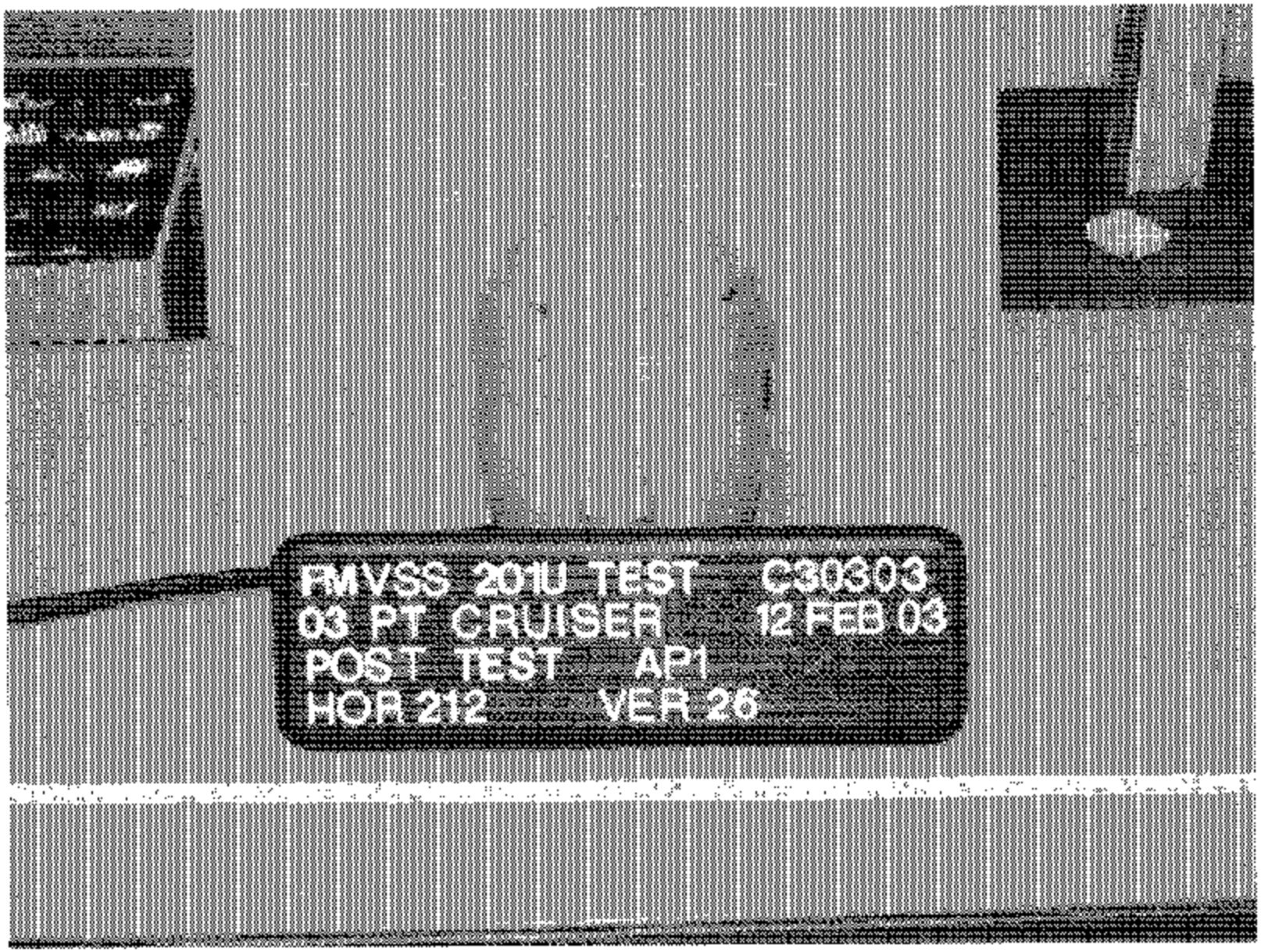


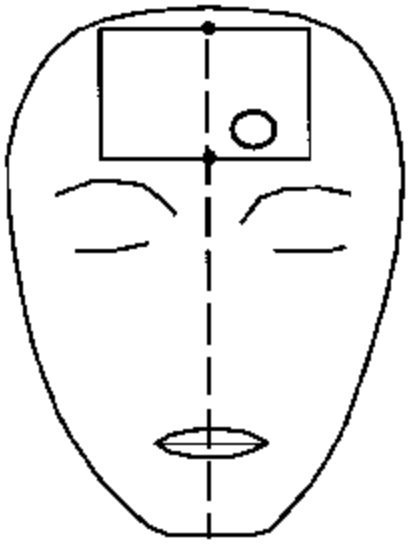
Figure : 3P1 HEADFORM

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	8	Test Date:	2/12/03
Target Location:	B-pillar	Target Code:	BP2
Horizontal Impact Angle:	270 °	Vertical Impact Angle:	5 °
Ambient Temperature:	22 °C	Time of Impact:	13:35
Headform Number:	1255		

Impact Point:
Description:

Description:	From lower midpoint				
On centerline	15	mm up			
On centerline	9	-	mm right	x	mm left



Free Motion HIC:	623.6	HIC(d):	636.8		
Impact Velocity (kph):	23.55	HICT1	3.1 msec	HICT2	7.4 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - BP2

FMH Headform 1255

Location: BP2

Test Date: February 12, 2003

Work File: BP2

----------**TEST RESULTS**----------

Lab Temperature: 22 C

Lab Humidity: 13 %

Velocity at Impact: 23.55 KPH

Free Flight Distance:213.94 mm

HICd: 636.8

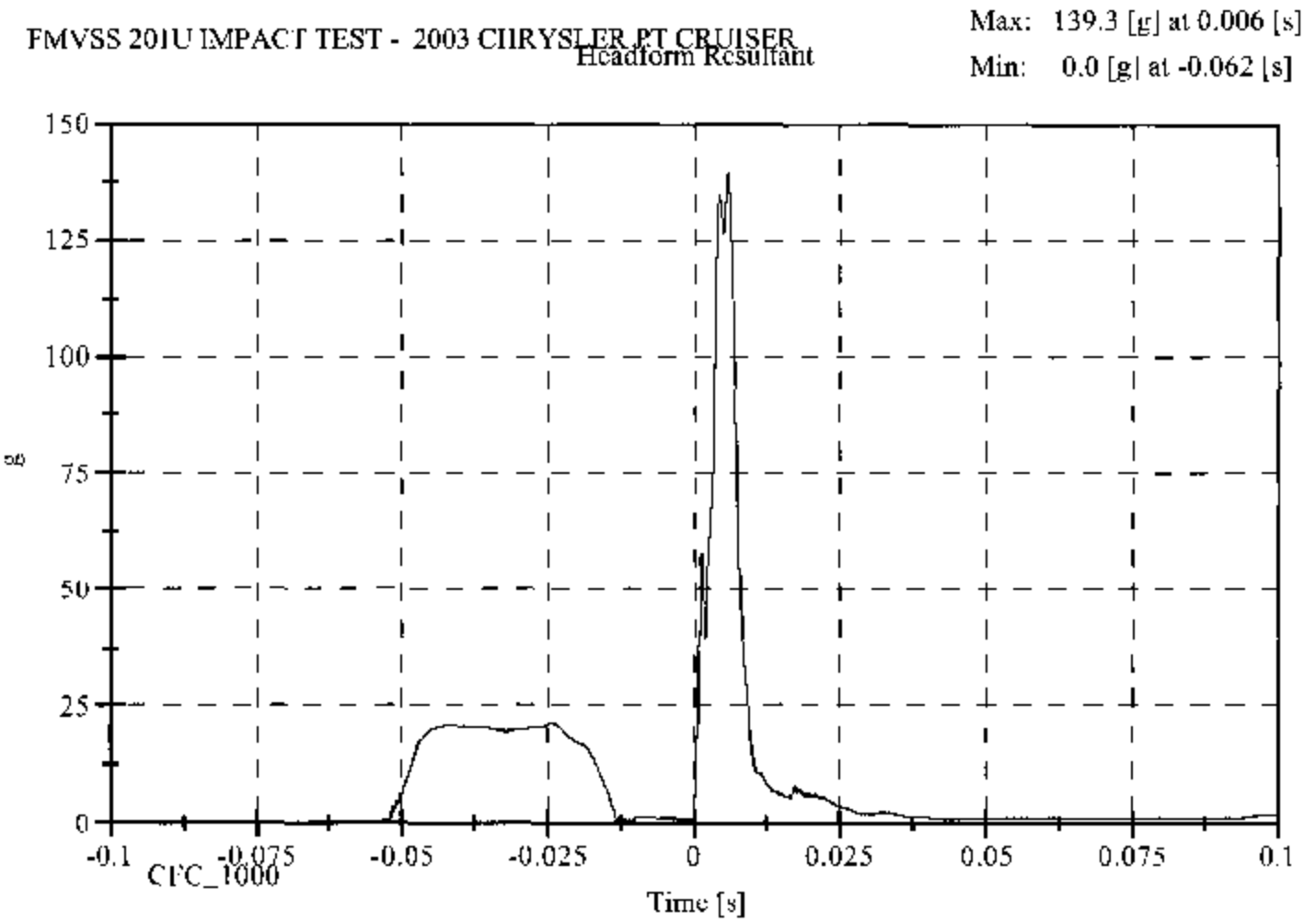
HIC (36ms): 623.6

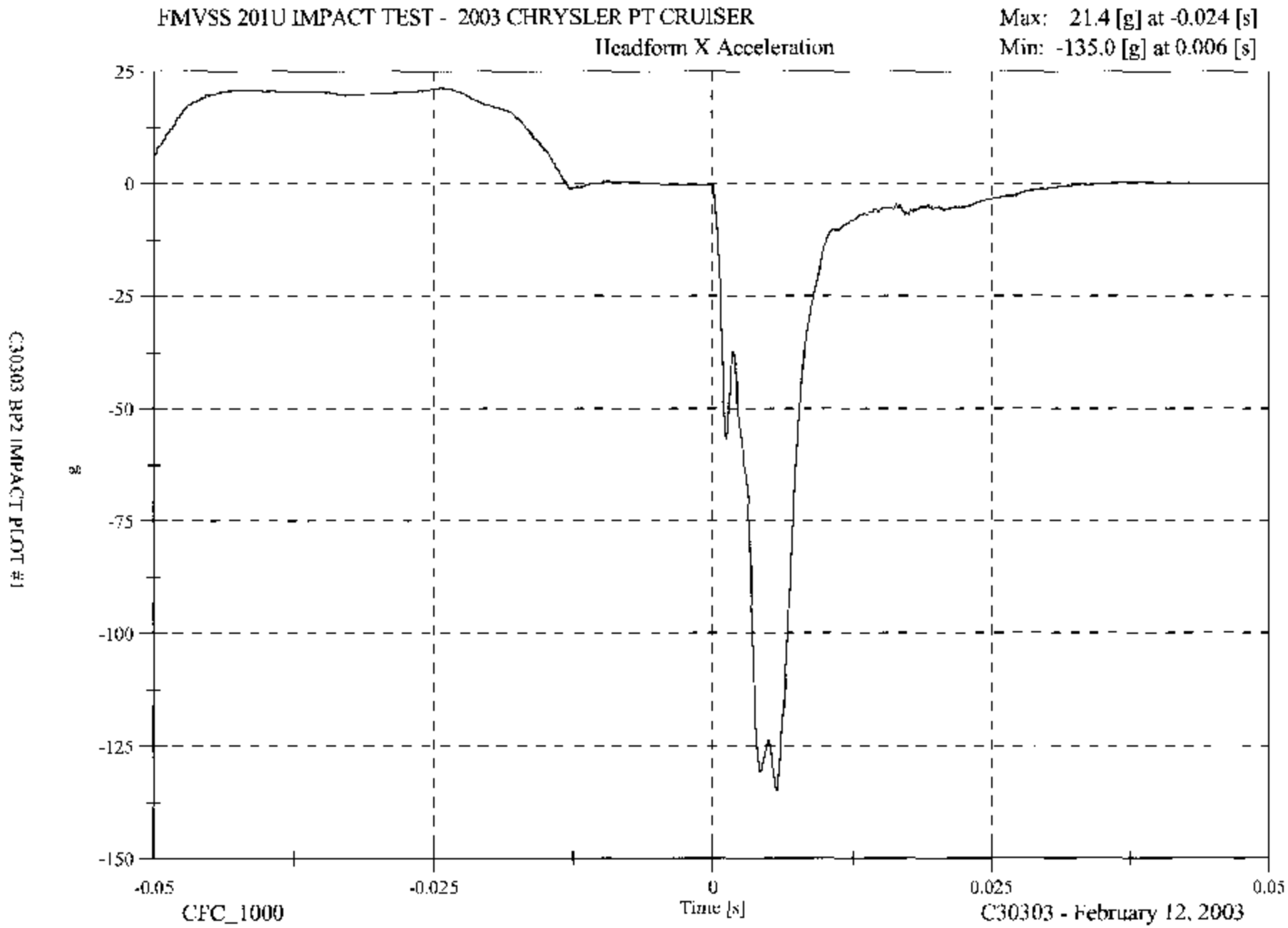
t1: 3.1 msec

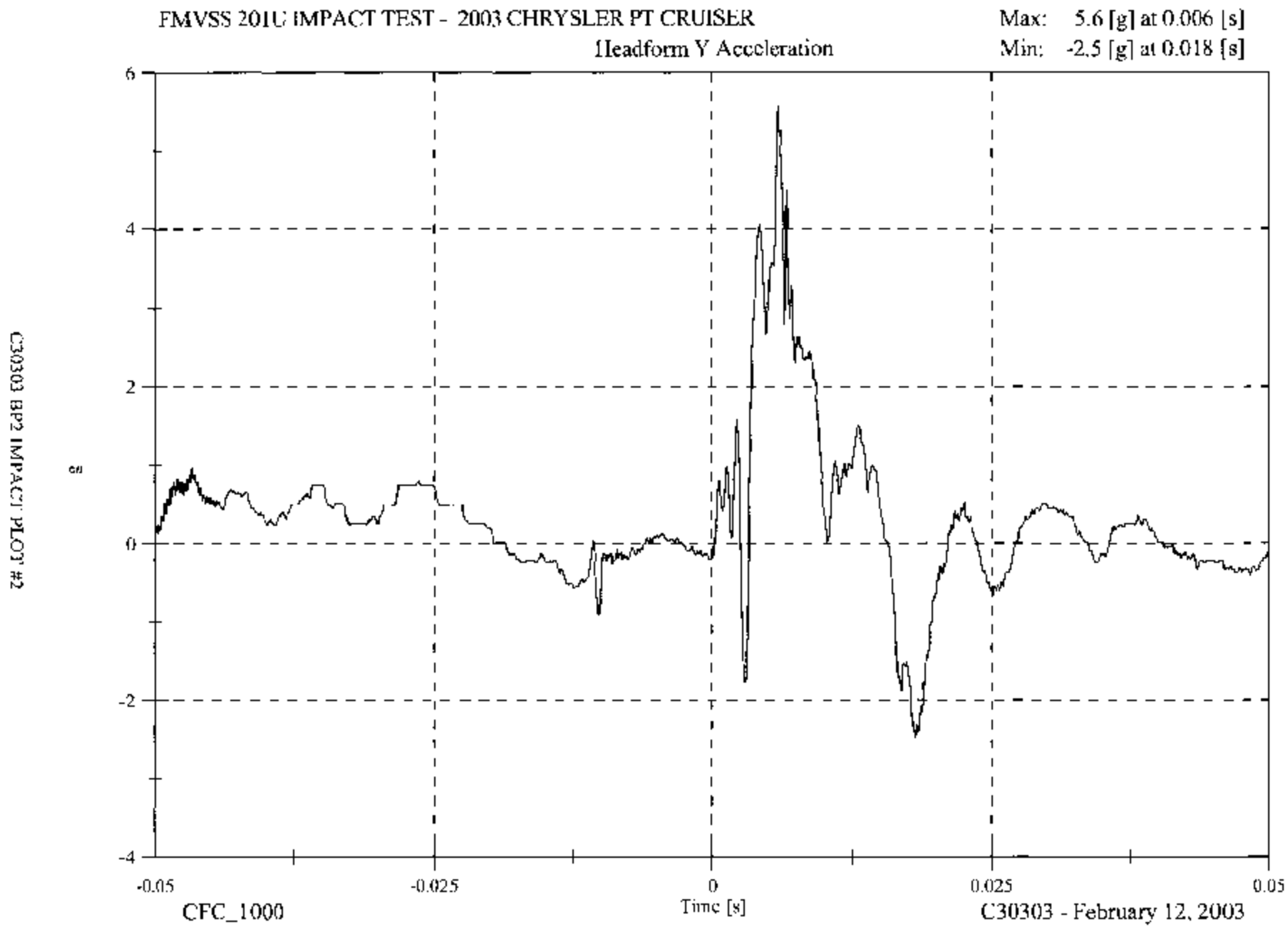
t2: 7.4 msec

Duration: 4.3 msec

Average Acceleration: 8.2 g




FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform X Acceleration
Max: 21.4 [g] at -0.024 [s]
Min: -135.0 [g] at 0.006 [s]
25
0
-25
-50
-75
-100
-125
-150
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 RP2 IMPACT PLOT #1


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Y Acceleration
Max: 5.6 [g] at 0.006 [s]
Min: -2.5 [g] at 0.018 [s]
6
4
2
0
-2
-4
g's
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 BP2 IMPACT PLOT #2

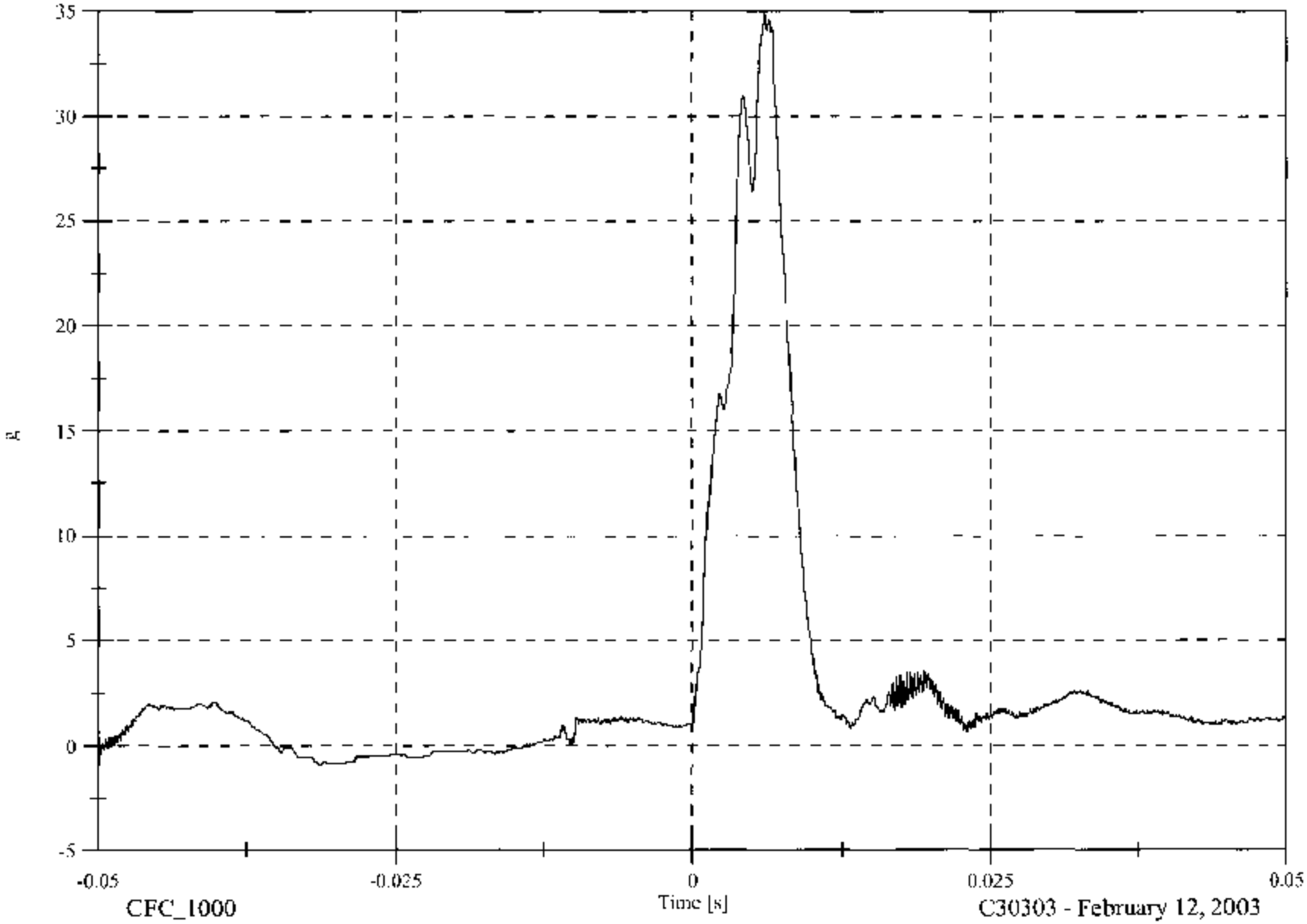
C30303 BP2 IMPACT PLOT #3

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER

Headform Z Acceleration

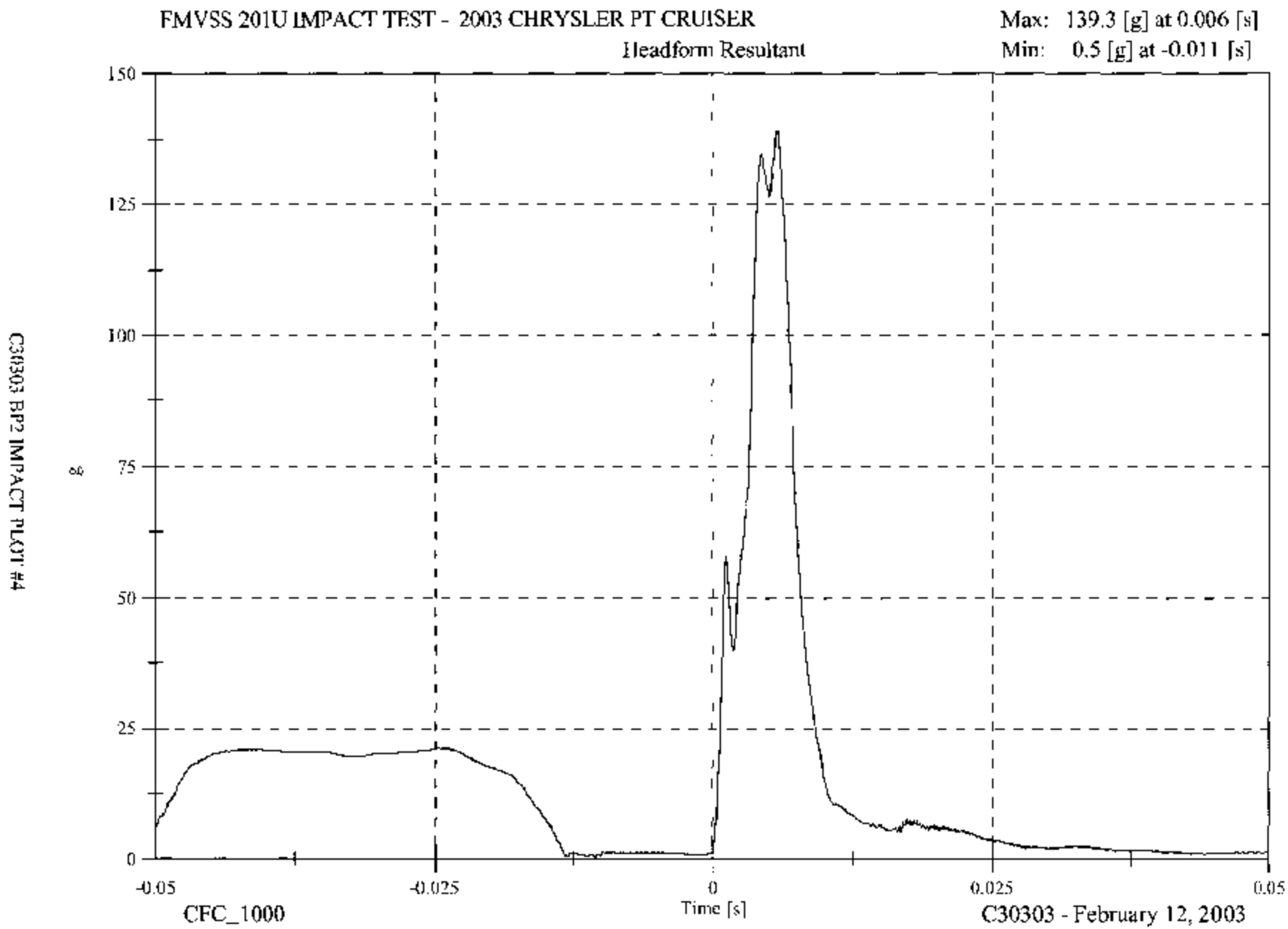
Max: 34.8 [g] at 0.006 [s]

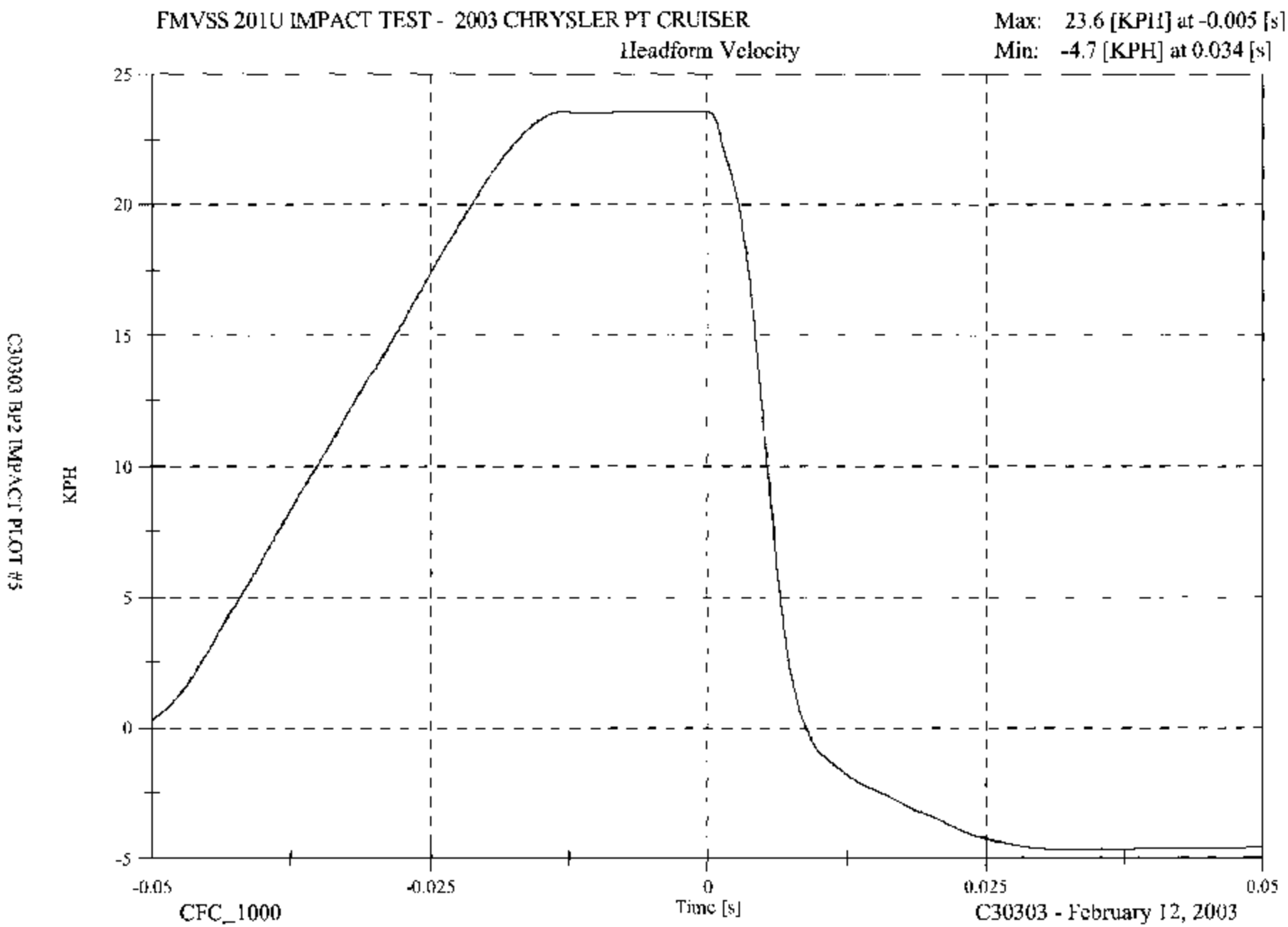
Min: -0.9 [g] at -0.031 [s]

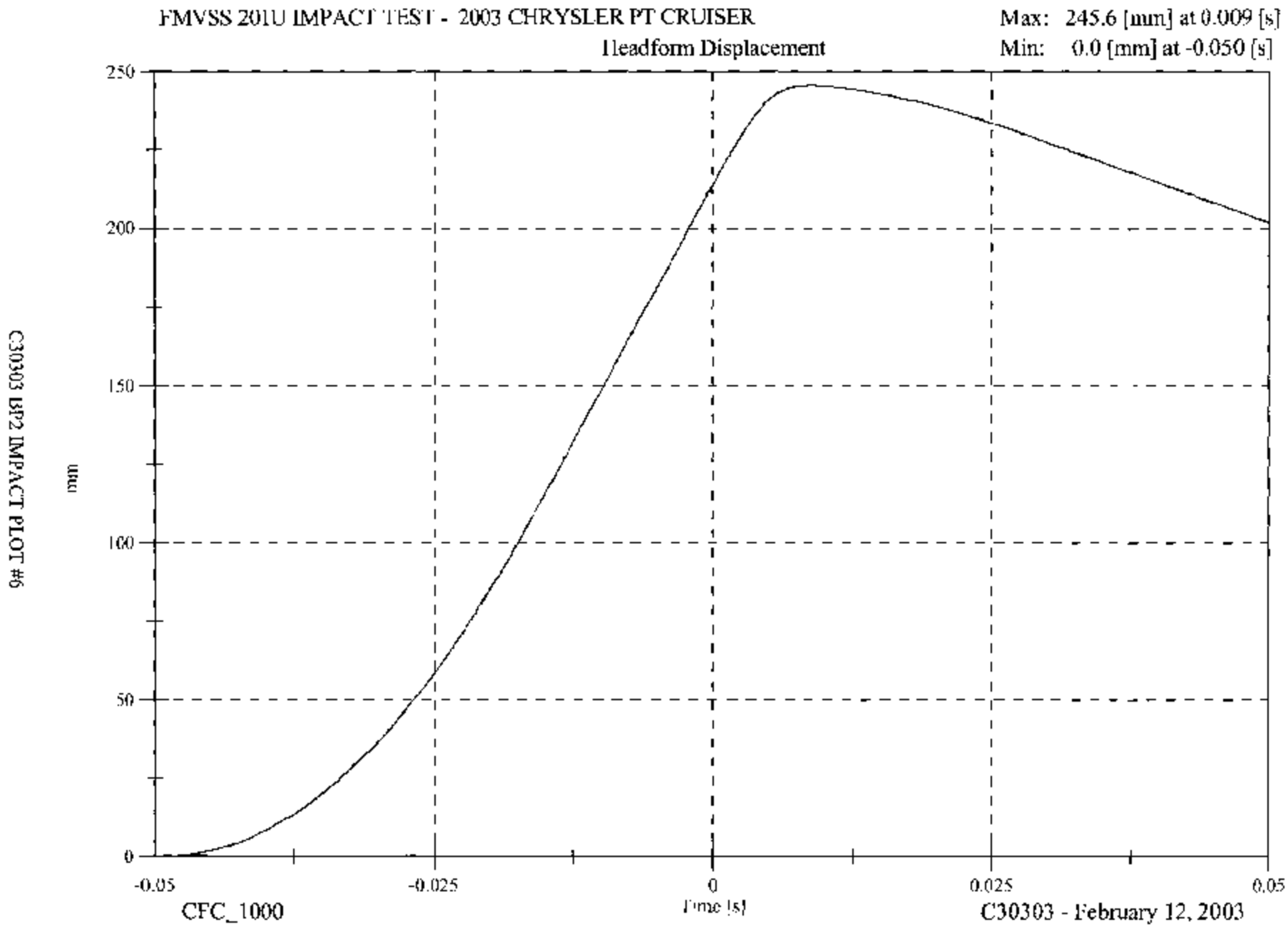


CFC_1000

C30303 - February 12, 2003


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Resultant
Max: 139.3 [g] at 0.006 [s]
Min: 0.5 [g] at -0.011 [s]
150
125
100
75
50
25
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 BP2 IMPACT PLOT #4


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Velocity
Max: 23.6 [KPH] at -0.005 [s]
Min: -4.7 [KPH] at 0.034 [s]
C30303 BP2 IMPACT PLOT #5
KPH
25
20
15
10
5
0
-5
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Displacement
Max: 245.6 [mm] at 0.009 [s]
Min: 0.0 [mm] at -0.050 [s]
250
200
150
100
50
0
mm
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 HP2 IMPACT PLOT #6

8653-EMH-10

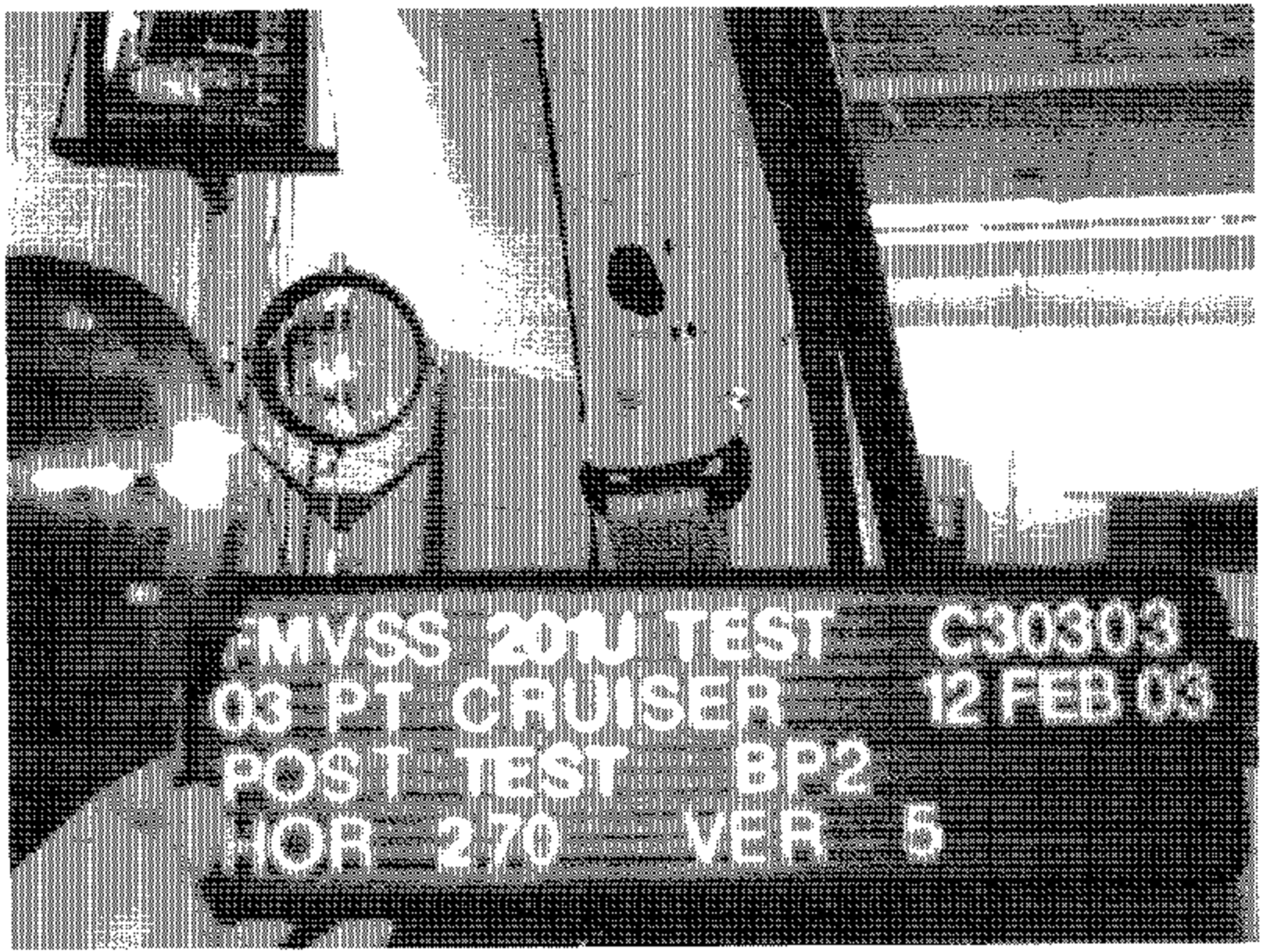


Figure : POST-TEST BP2

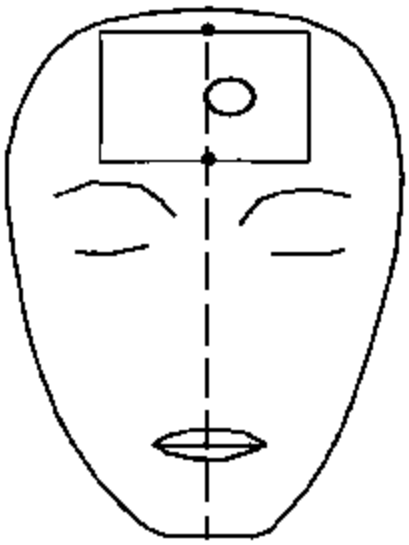
Figure : BP2 HEADROOM

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	9	Test Date:	2/12/03
Target Location:	Upper Roof B-Pillar	Target Code:	URBP
Horizontal Impact Angle:	270 °	Vertical Impact Angle:	31 °
Ambient Temperature:	22 °C	Time of Impact:	13:52
Headform Number:	0642		

Impact Point:
Description:

Description:	From lower midpoint				
On centerline	33	mm up			
On centerline	13	-	mm right	x	mm left



Free Motion HIC:	520.1	HIC(d):	558.8		
Impact Velocity (kph)	23.33	HICT1	3.7 msec	HICT2	13.6 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - URB

FMH Headform 0642

Location: URBP

Test Date: February 12, 2003

Work File: URBP

----------TEST RESULTS----------

Lab Temperature: 22 C

Lab Humidity: 13 %

Velocity at Impact: 23.33 KPH

Free Flight Distance: 217.60 mm

HICd: 558.8

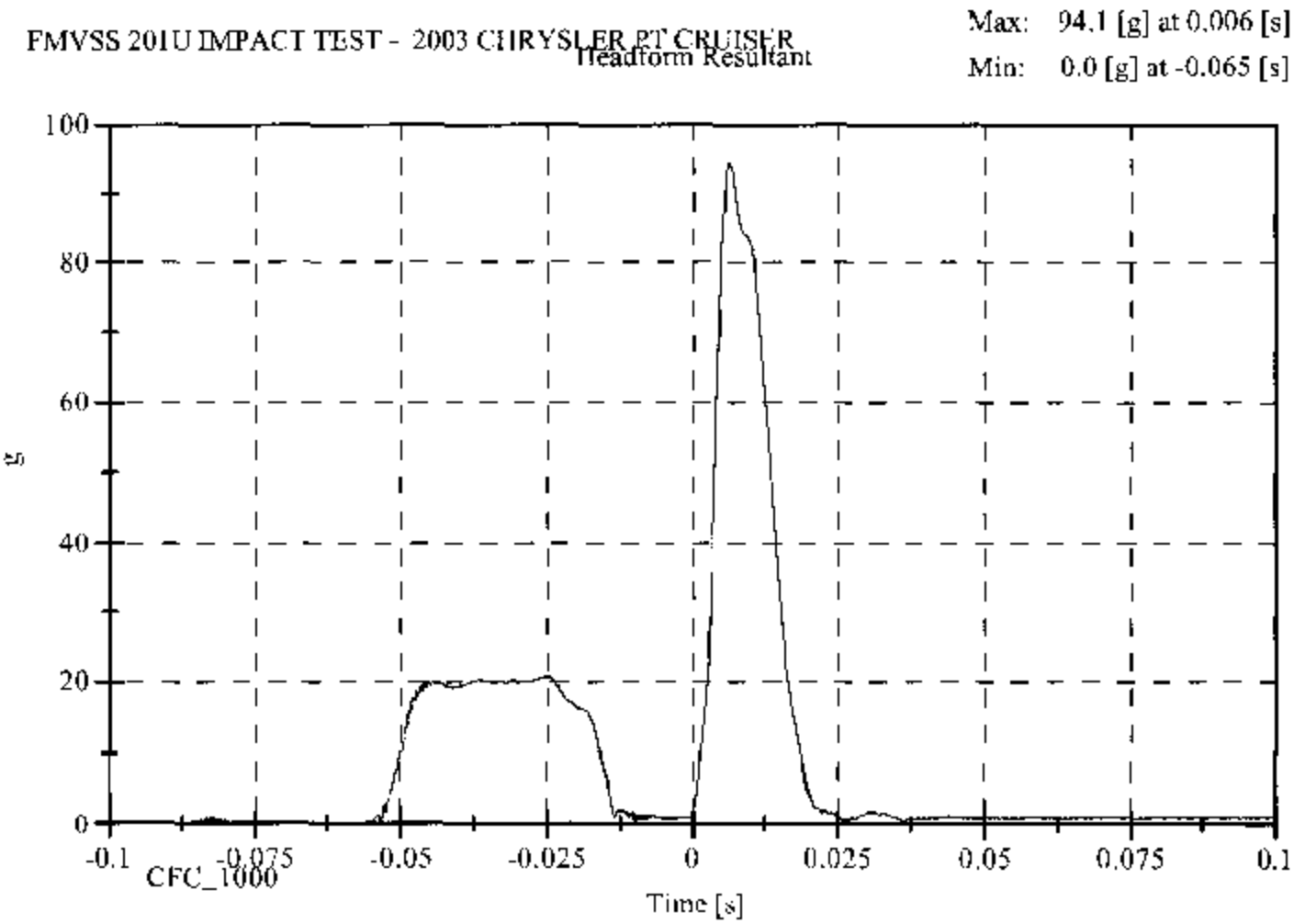
HIC (36ms): 520.1

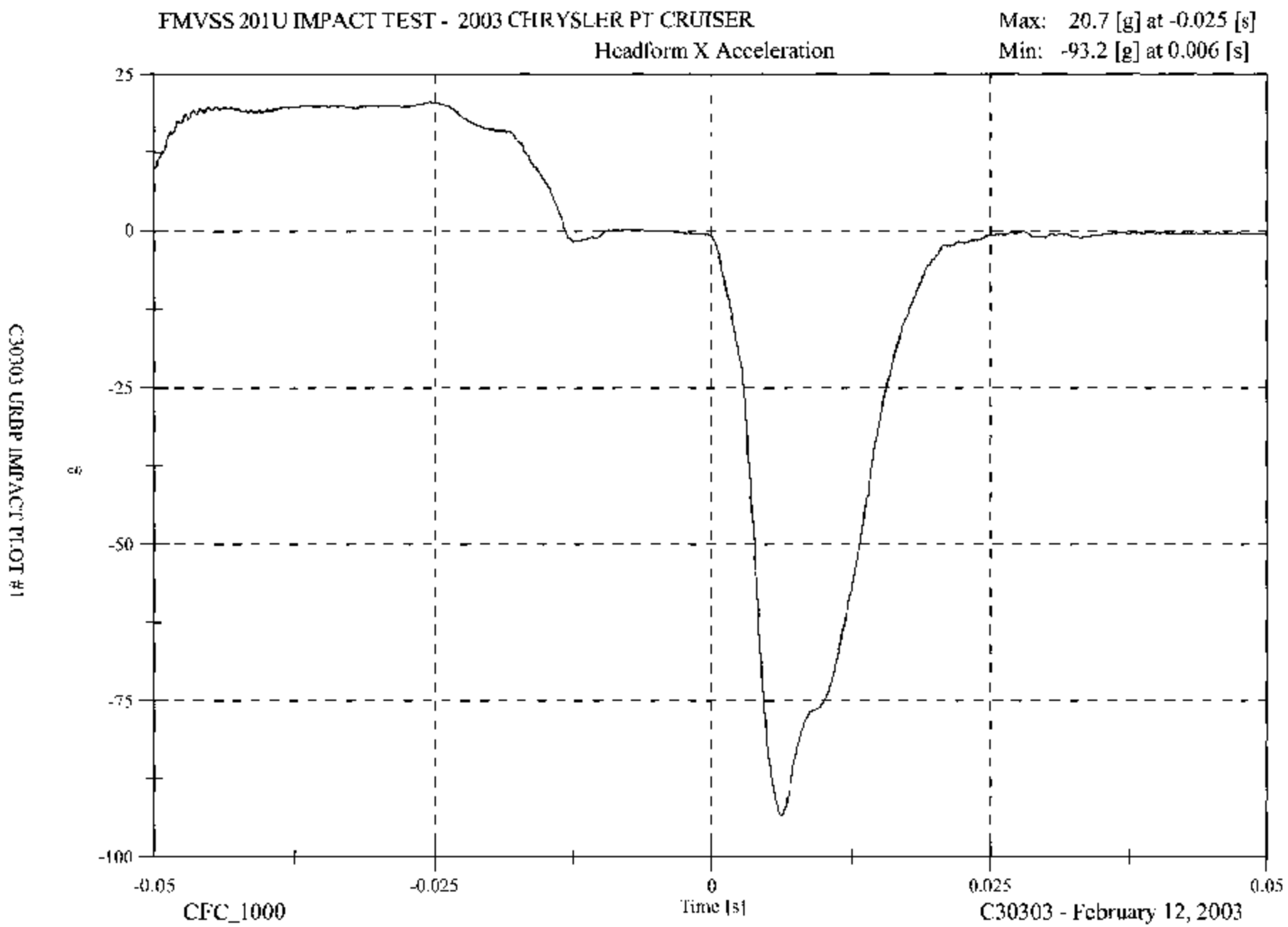
t1: 3.7 msec

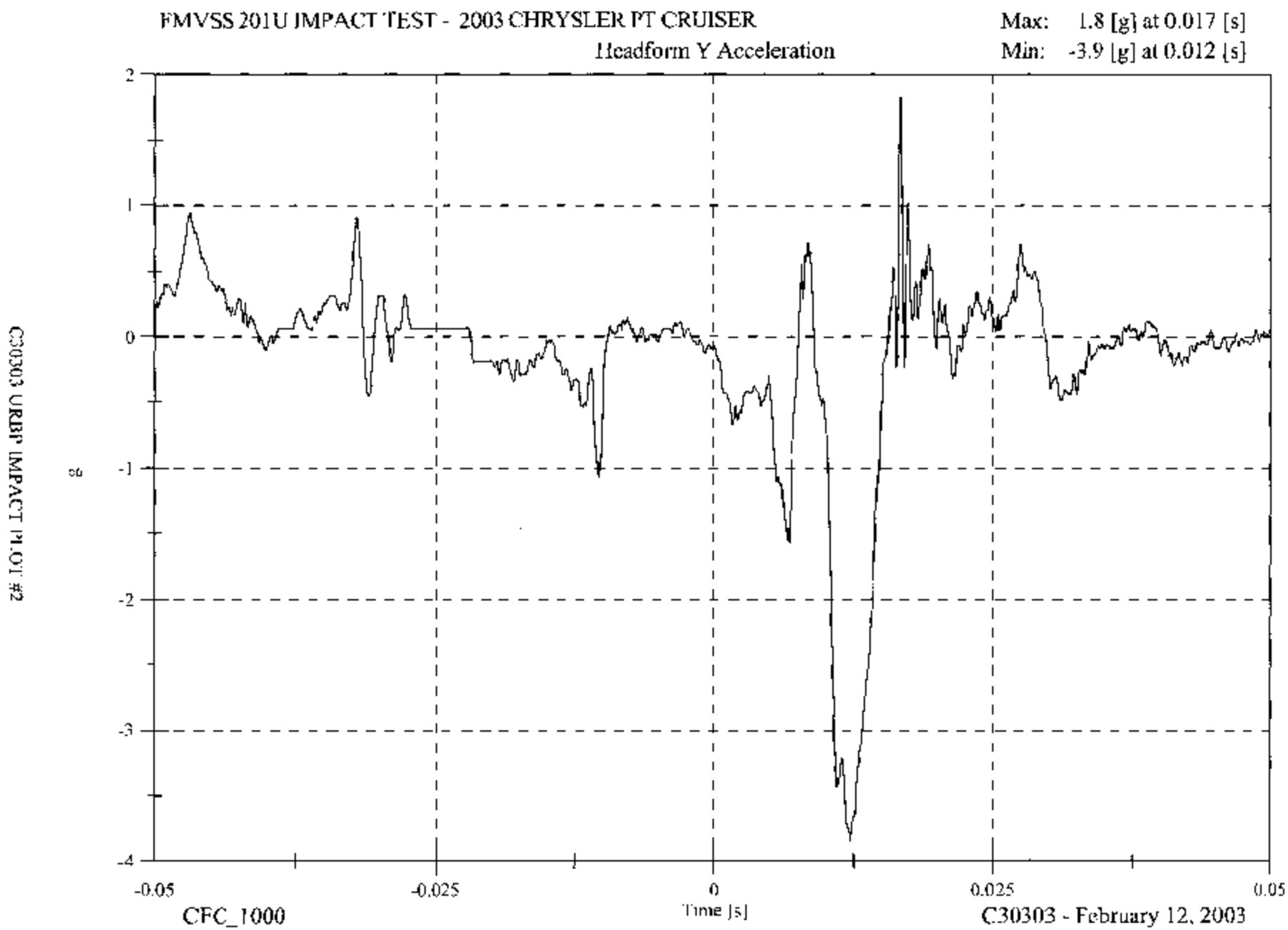
t2: 13.6 msec

Duration: 9.9 msec

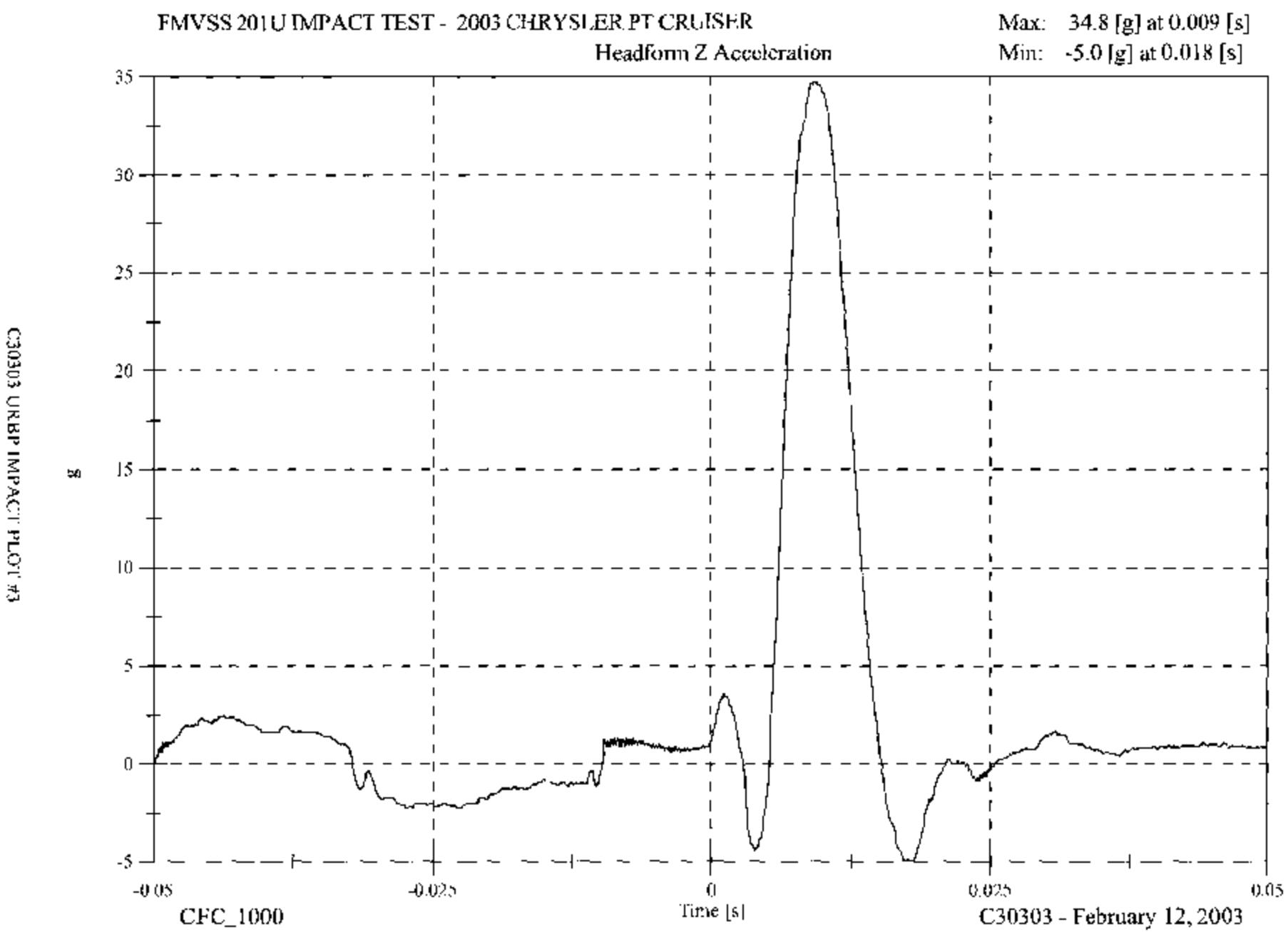
Average Acceleration: 8.7 g

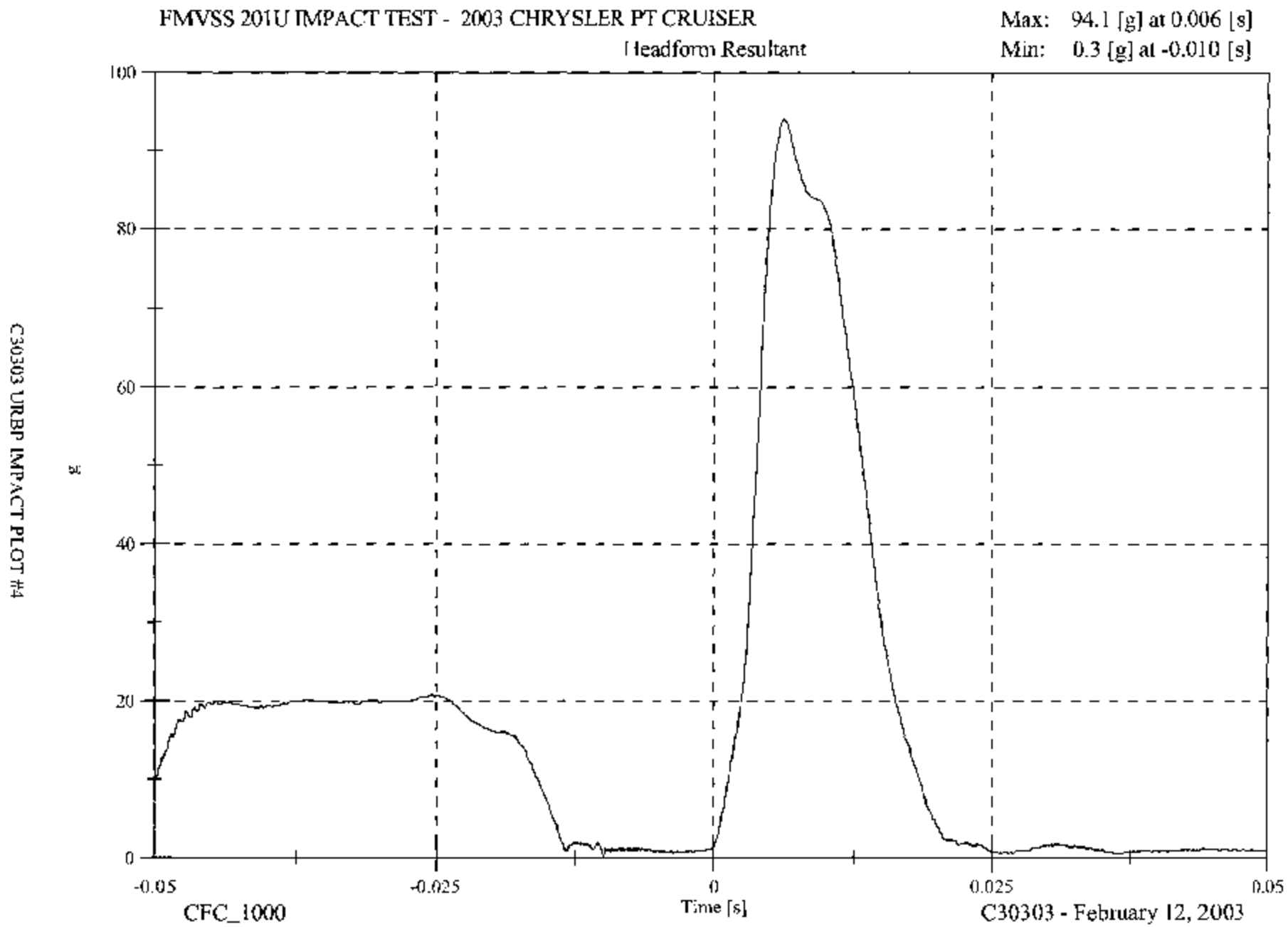



FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform X Acceleration
Max: 20.7 [g] at -0.025 [s]
Min: -93.2 [g] at 0.006 [s]
25
0
-25
-50
-75
-100
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 URBP IMPACT PLOT #1

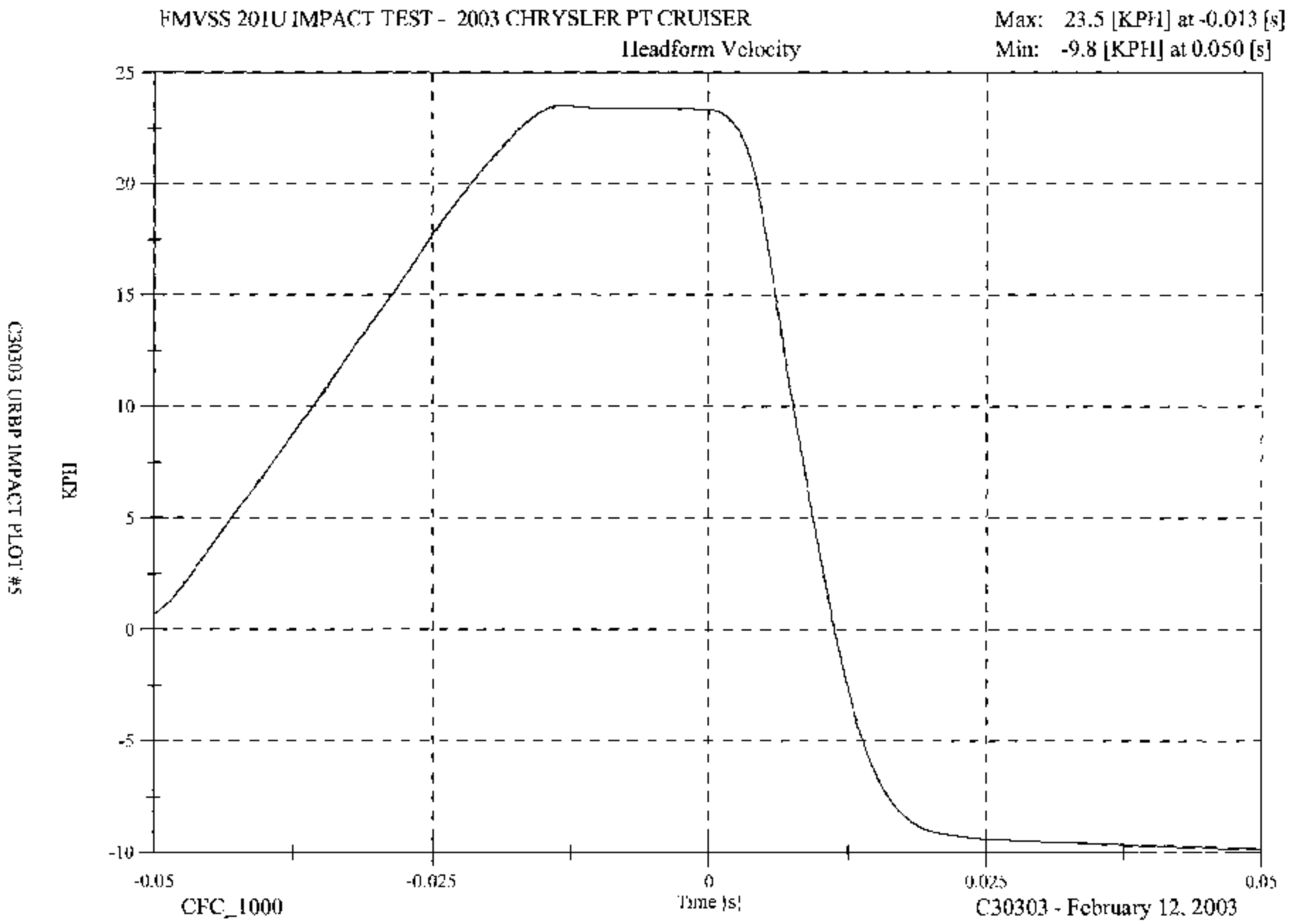


C30303 URBP IMPACT PLOT #2


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Z Acceleration
Max: 34.8 [g] at 0.009 [s]
Min: -5.0 [g] at 0.018 [s]
C30303 URBP IMPACT PLOT #3
g
35
30
25
20
15
10
5
0
-5
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003



C30303 URBP IMPACT PLOT #4


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Velocity
Max: 23.5 [KPH] at -0.013 [s]
Min: -9.8 [KPH] at 0.050 [s]
25
20
15
10
5
0
-5
-10
KPH
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 URBP IMPACT PLOT #5

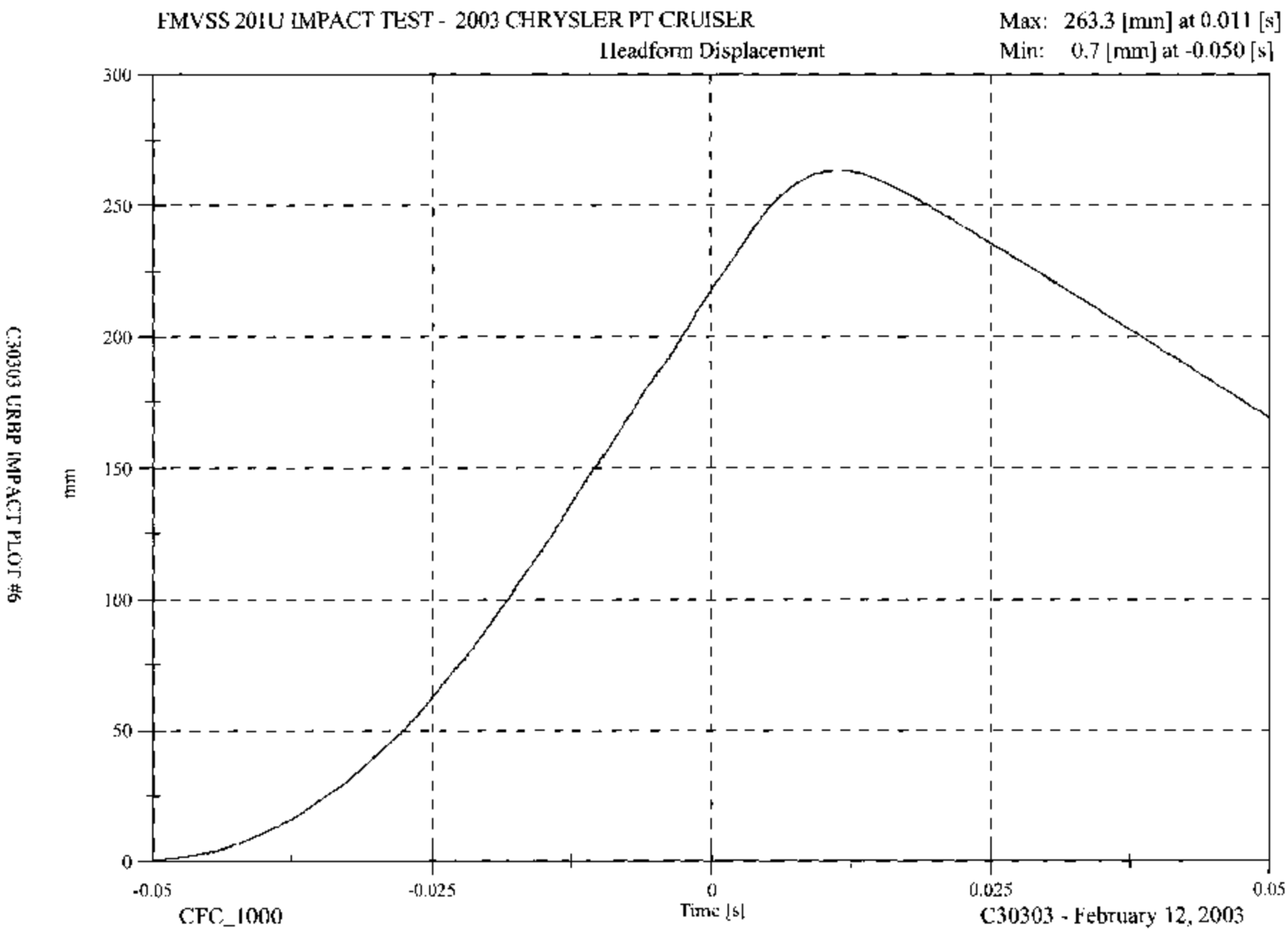

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Displacement
Max: 263.3 [mm] at 0.011 [s]
Min: 0.7 [mm] at -0.050 [s]
C30303 URBP IMPACT PLOT #6
mm
300
250
200
150
100
50
0
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003

Figure . PRE-TEST URBP

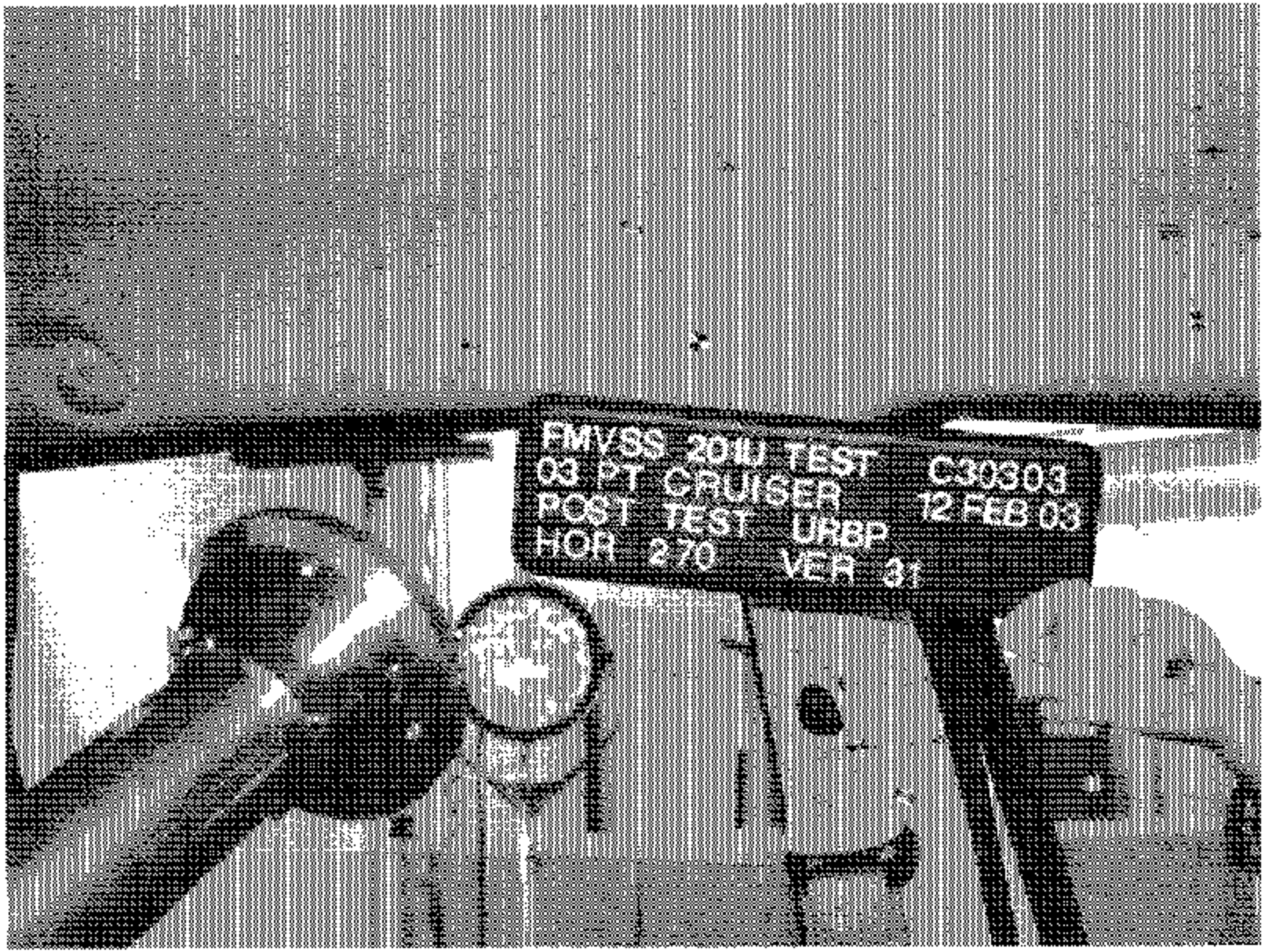


Figure . POST-TEST URBP

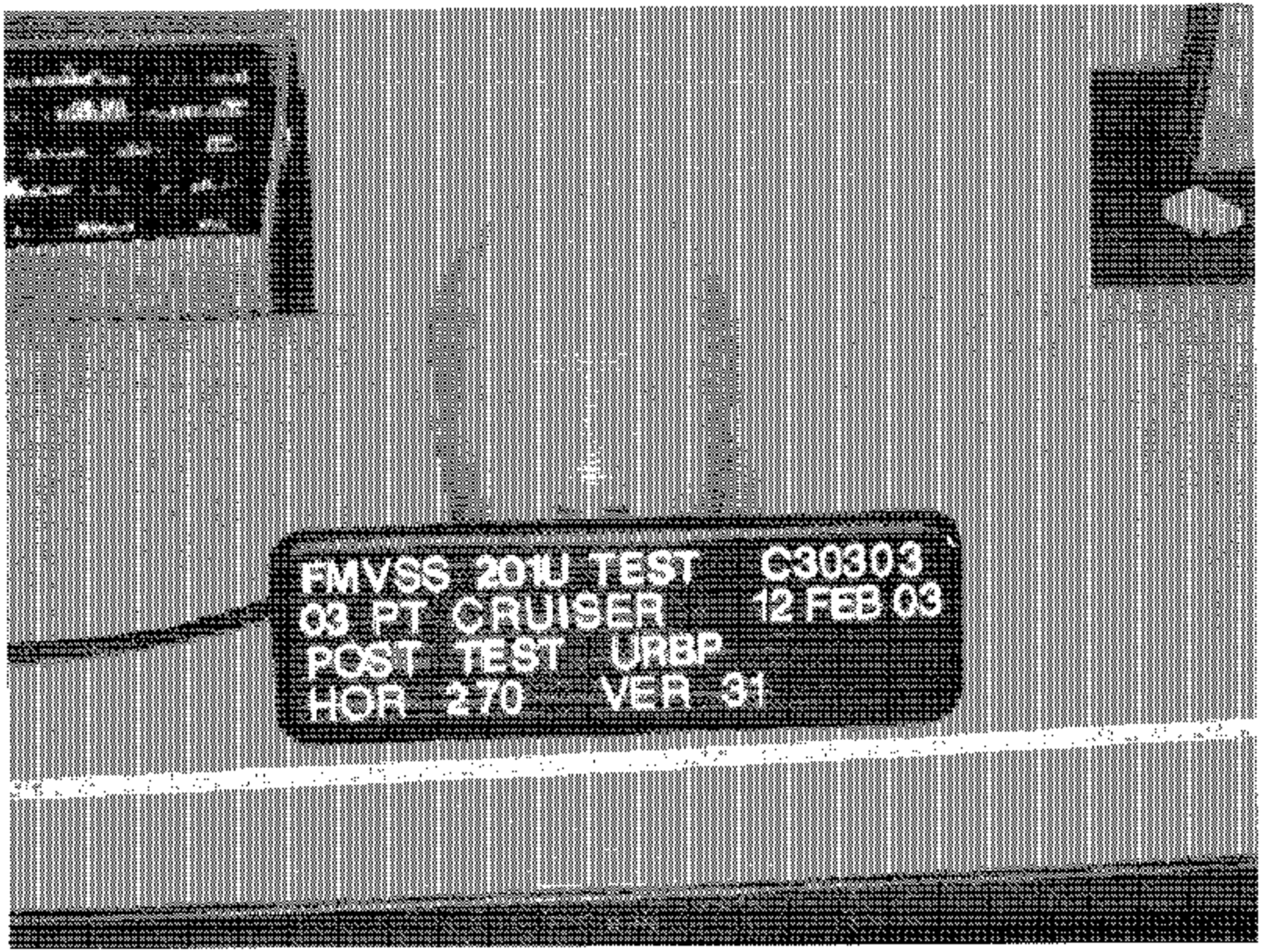


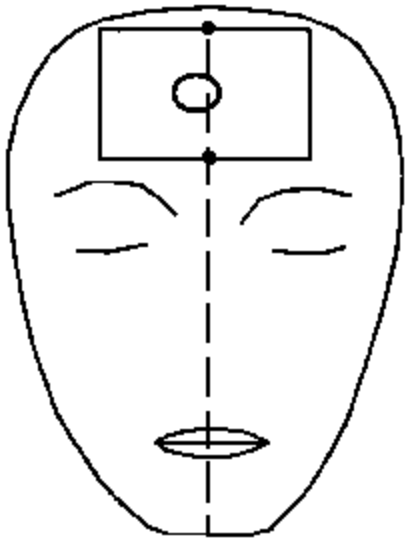
Figure : URBP HEADFORM

Year/Make/Model/Body Style:	2003 Chrysler PT Cruiser 4-door		
Vehicle Body Color:	White	VIN:	3C4FY48B73T544020
Vehicle NHTSA No.:	C30303	Month & Year of Manufacture:	09/02

Test Number:	10	Test Date:	2/12/03
Target Location:	Rear Pillar	Target Code:	RP1
Horizontal Impact Angle:	315 °	Vertical Impact Angle:	33 °
Ambient Temperature:	22 °C	Time of Impact:	14:25
Headform Number:	0355		

Impact Point:
Description:

Description:	From lower midpoint					
On centerline	30	mm up				
On centerline	4	x	mm right	-	mm left	



Free Motion HIC:	489.8	HIC(d):	535.9		
Impact Velocity (kph):	23.41	HICT1	3.9 msec	HICT2	15.3 msec

Post-Test Comments:

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER C30303 - RP1

FMH Headform 0355

Location: RP1

Test Date: February 12, 2003

Work File: RP1

----------TEST RESULTS----------

Lab Temperature: 22 C

Lab Humidity: 13 %

Velocity at Impact: 23.41 KPH

Free Flight Distance:214.36 mm

HICd: 535.9

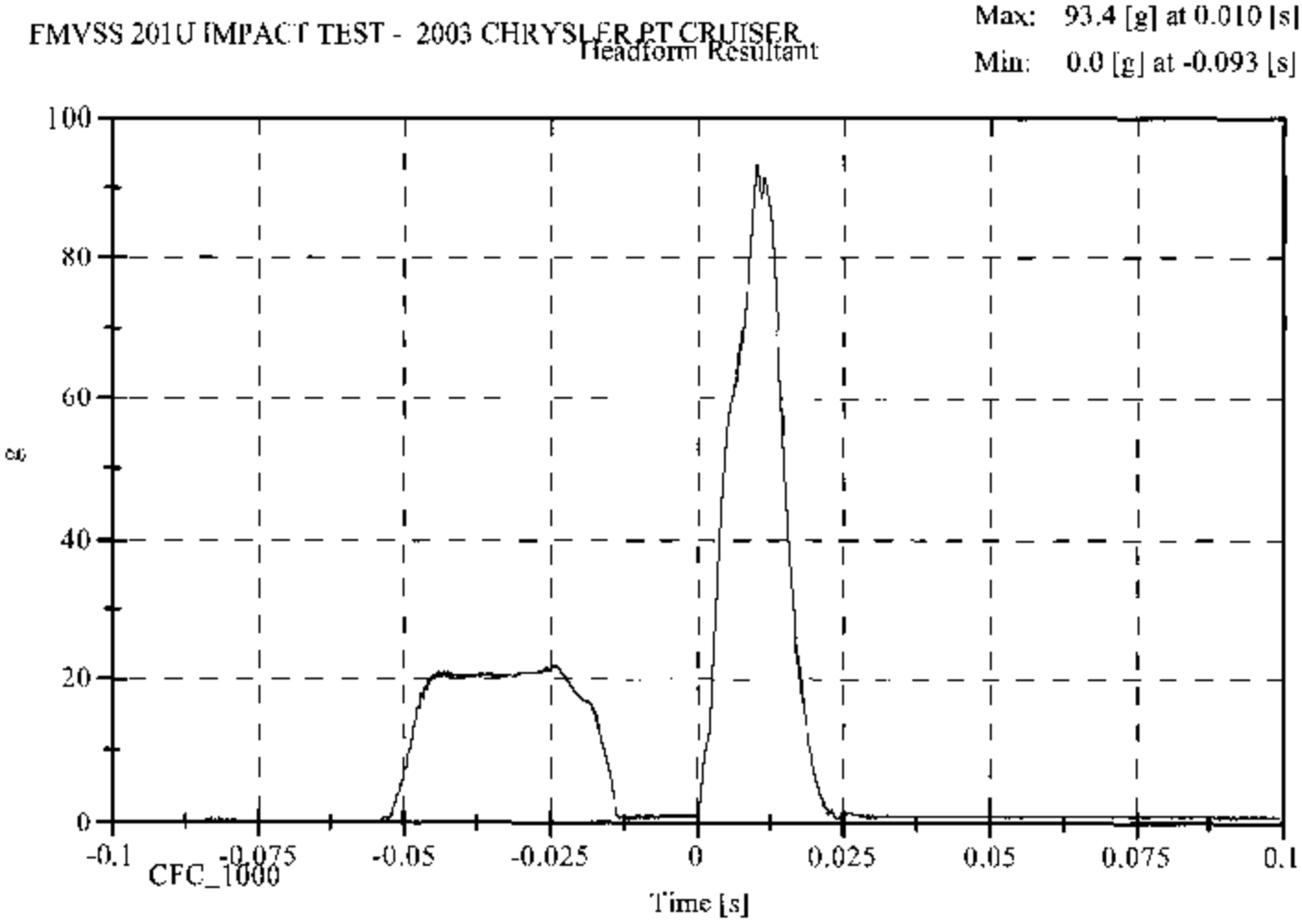
HIC (36ms): 489.8

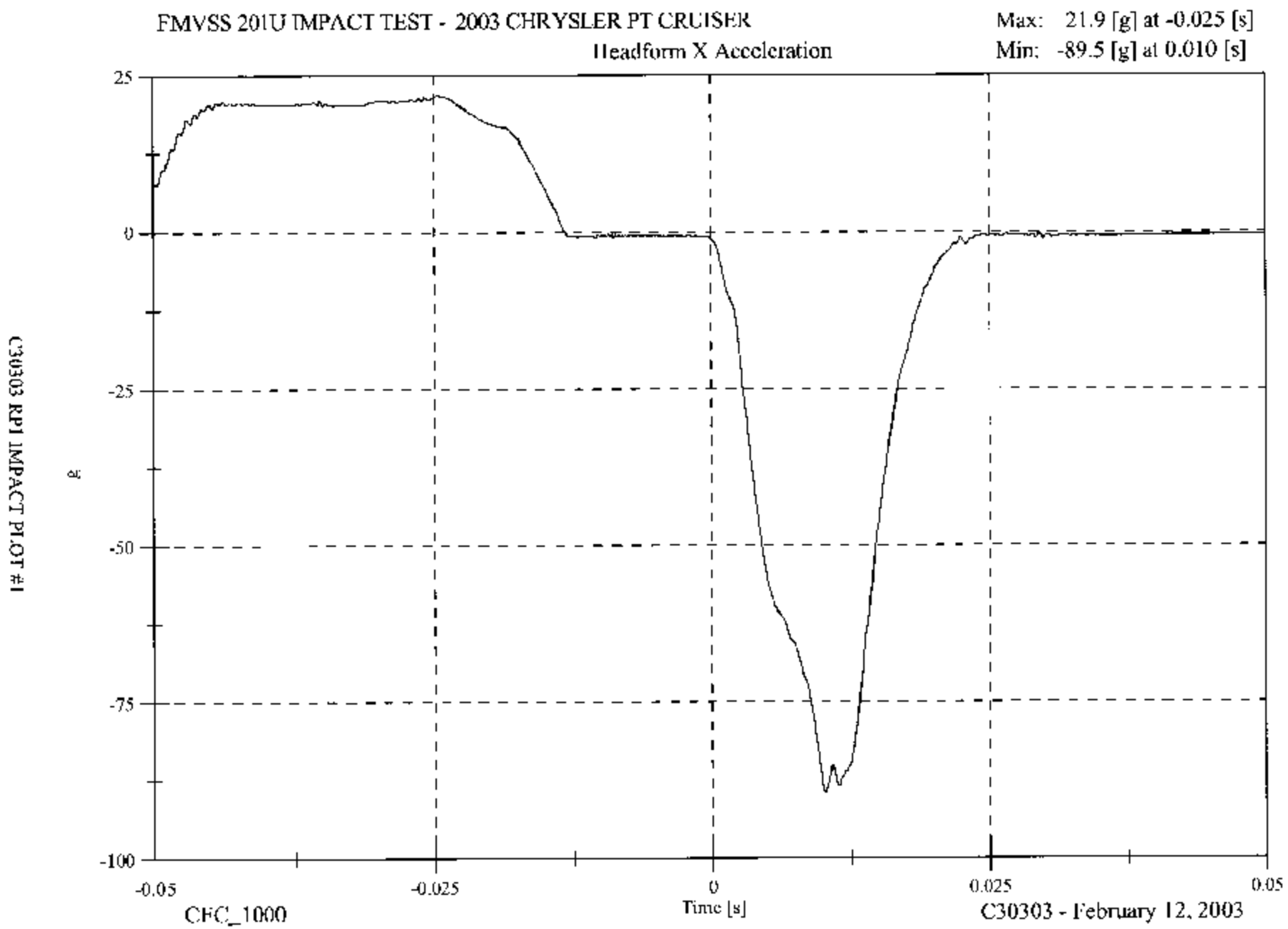
t1: 3.9 msec

t2: 15.3 msec

Duration: 11.3 msec

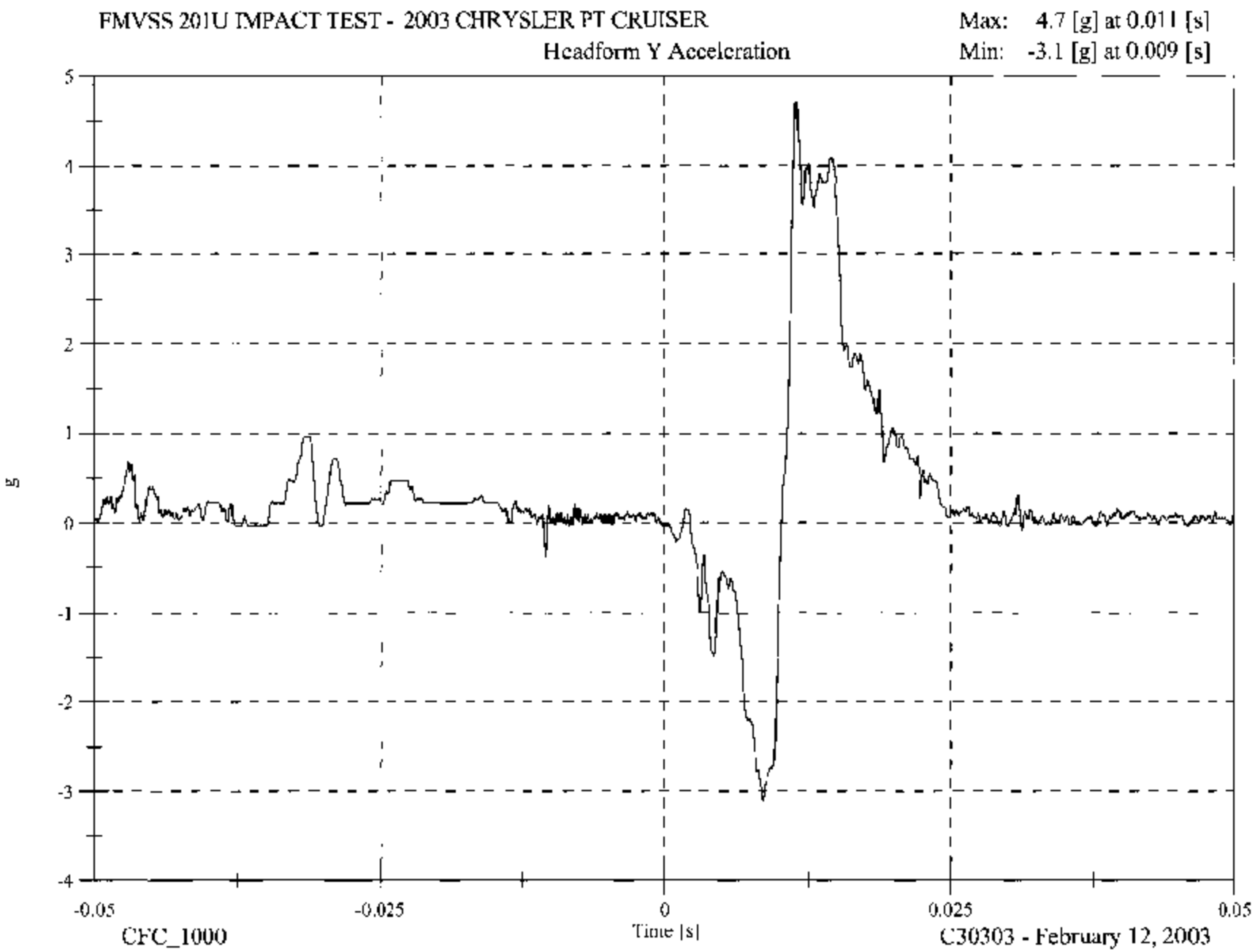
Average Acceleration: 8.9 g

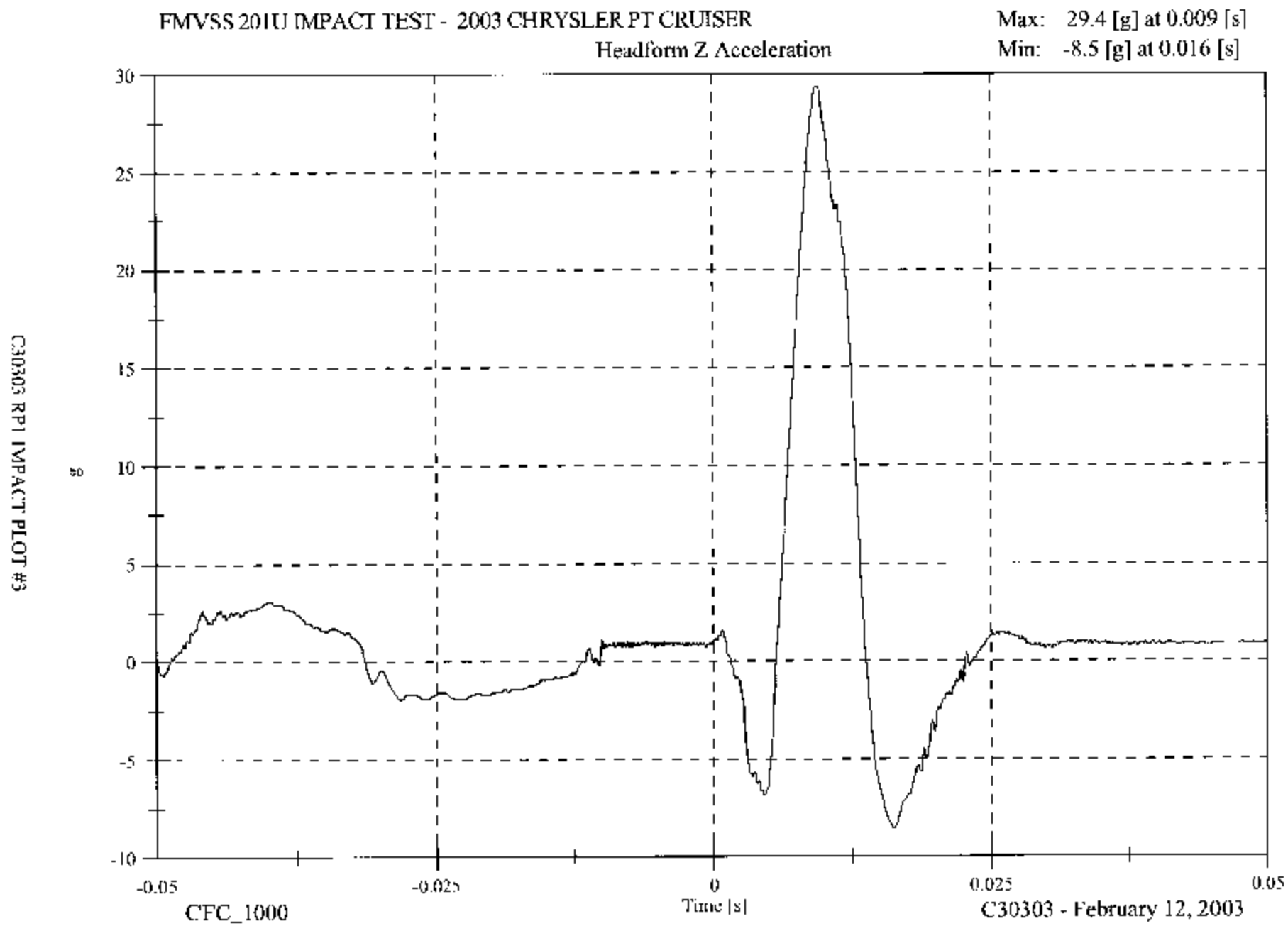




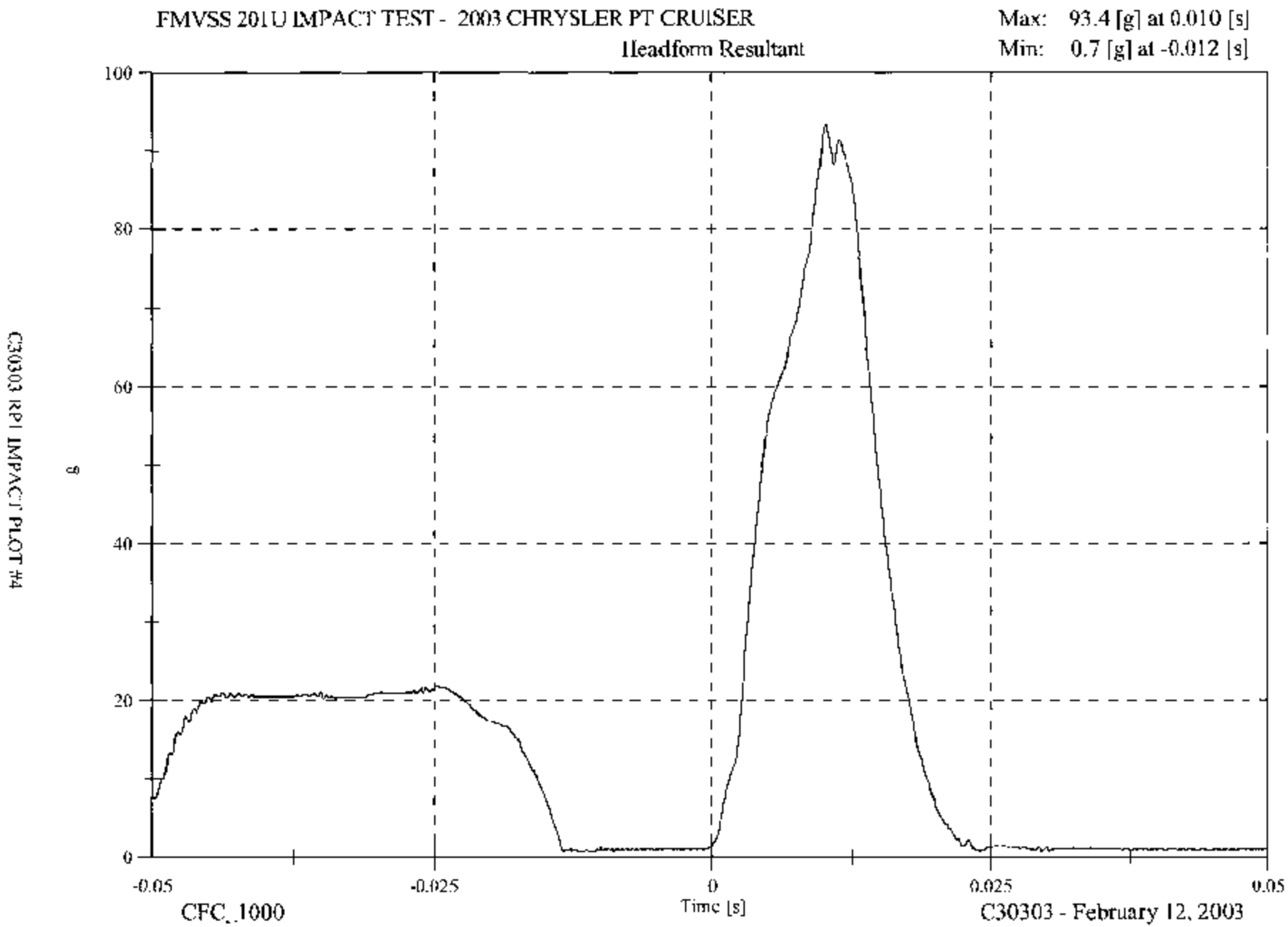
C30303 RPI IMPACT PLOT #1

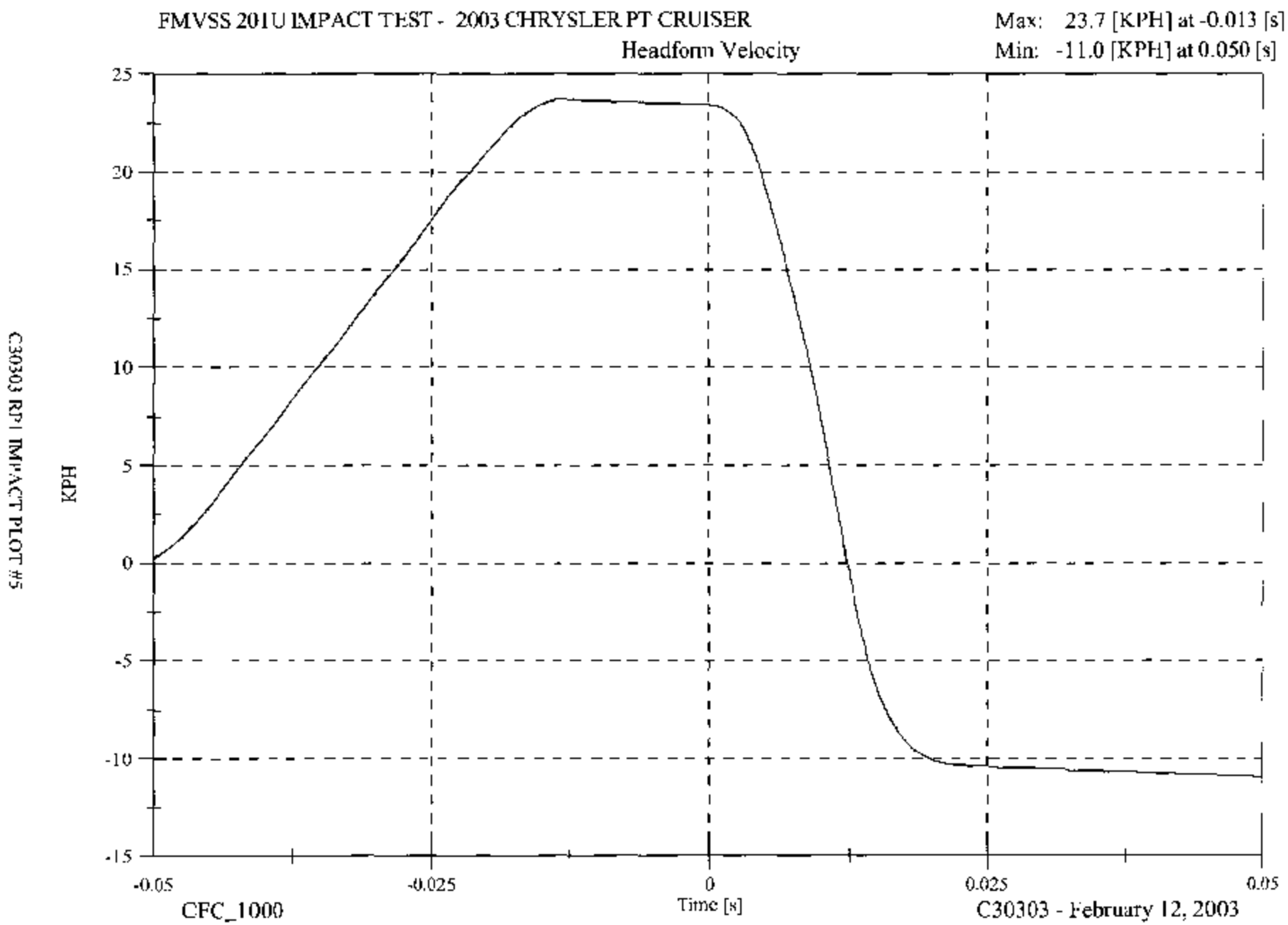
C30303 RPI IMPACT PLOT #2





C30303 RP1 IMPACT PLOT #3


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Resultant
Max: 93.4 [g] at 0.010 [s]
Min: 0.7 [g] at -0.012 [s]
100
80
60
40
20
0
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003
C30303 RPI IMPACT PLOT #4


FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER
Headform Velocity
Max: 23.7 [KPH] at -0.013 [s]
Min: -11.0 [KPH] at 0.050 [s]
C30303 RPI IMPACT PLOT #5
KPH
25
20
15
10
5
0
-5
-10
-15
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
C30303 - February 12, 2003

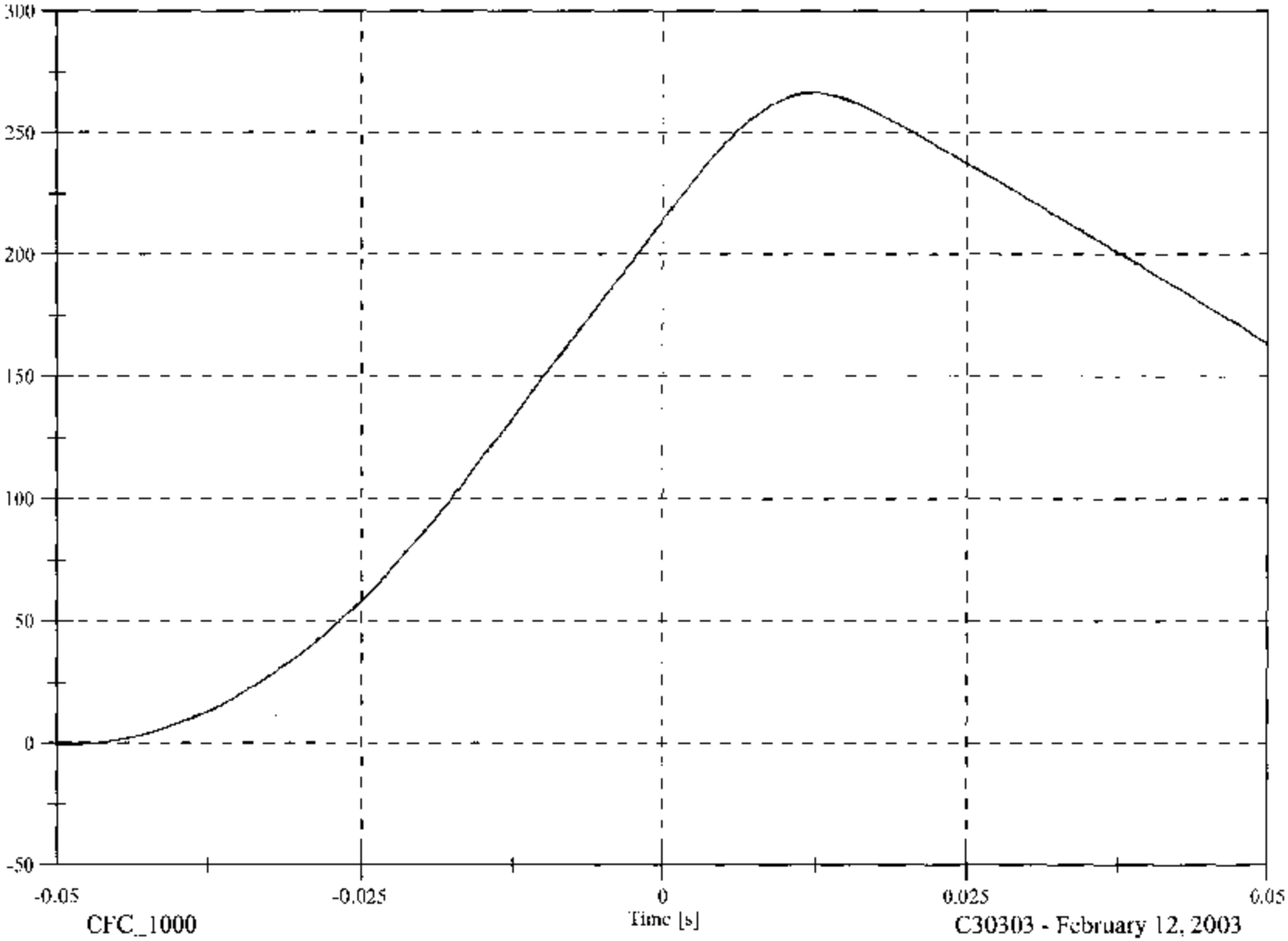
C30303 Rpt IMPACT PLOT #6

FMVSS 201U IMPACT TEST - 2003 CHRYSLER PT CRUISER

Headform Displacement

Max: 266.6 [mm] at 0.012 [s]

Min: -0.5 [mm] at -0.050 [s]



CFC_1000

C30303 - February 12, 2003

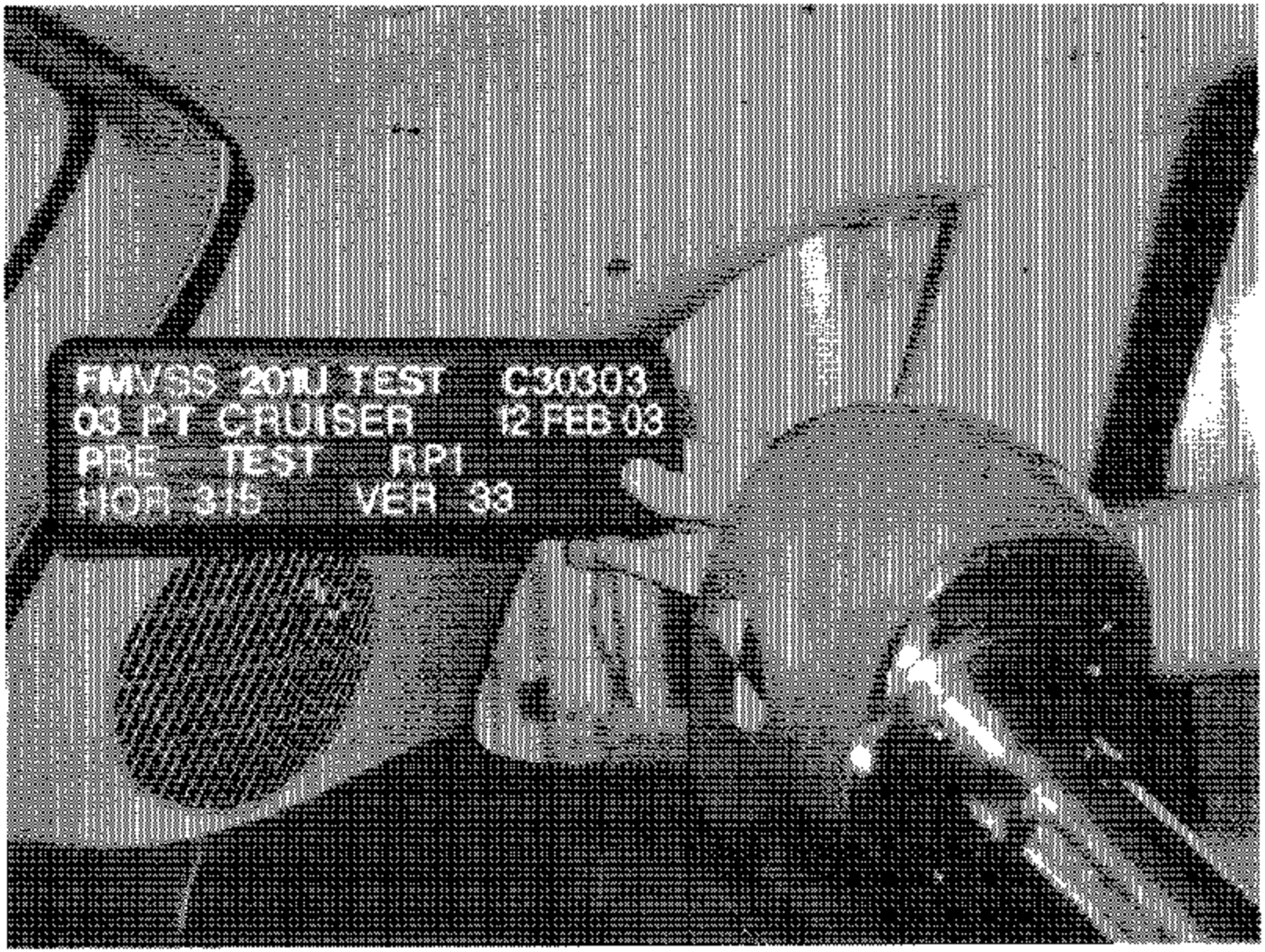


Figure 1: PRE-TEST RP1

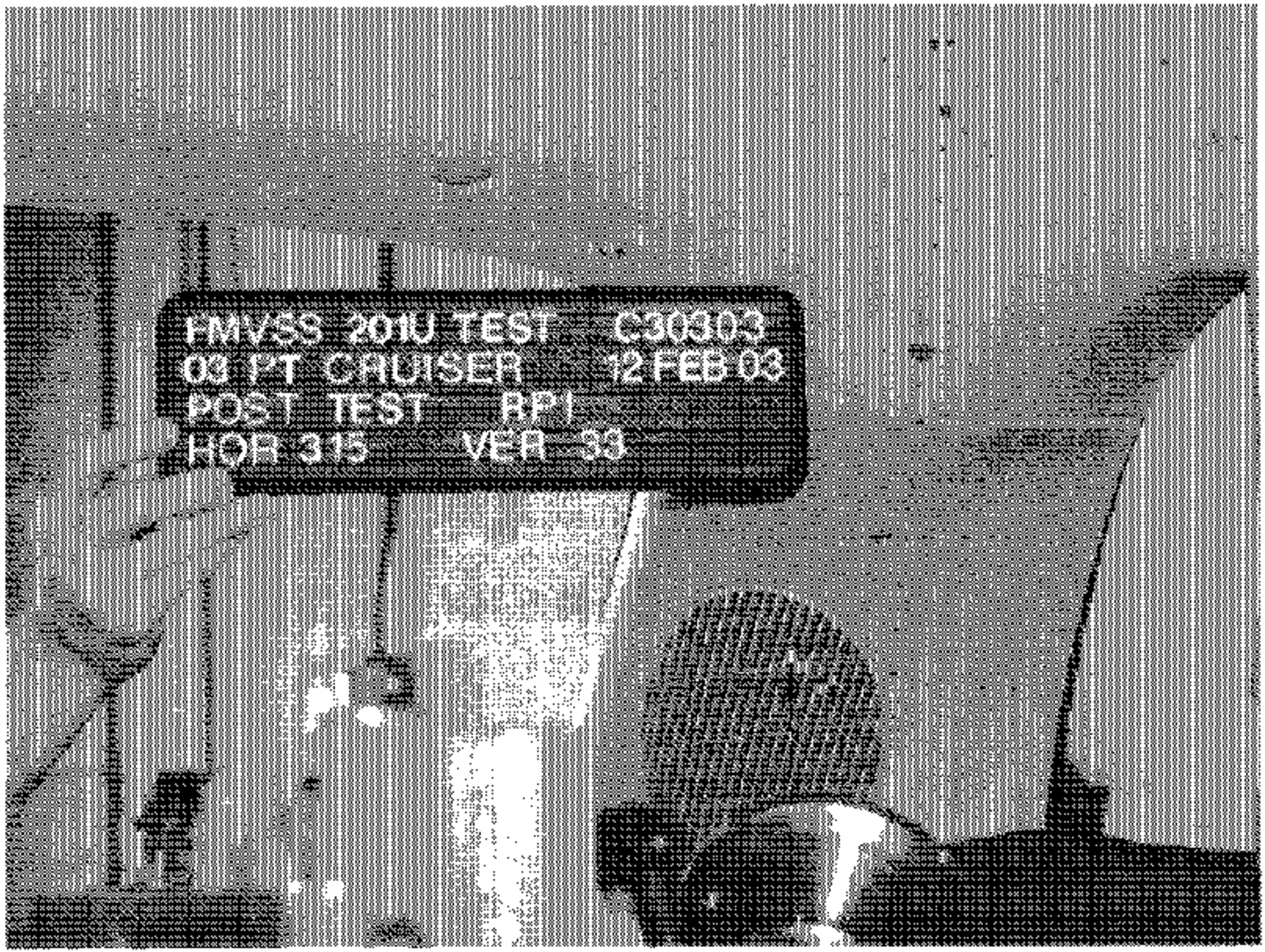


Figure POST-TEST RPI

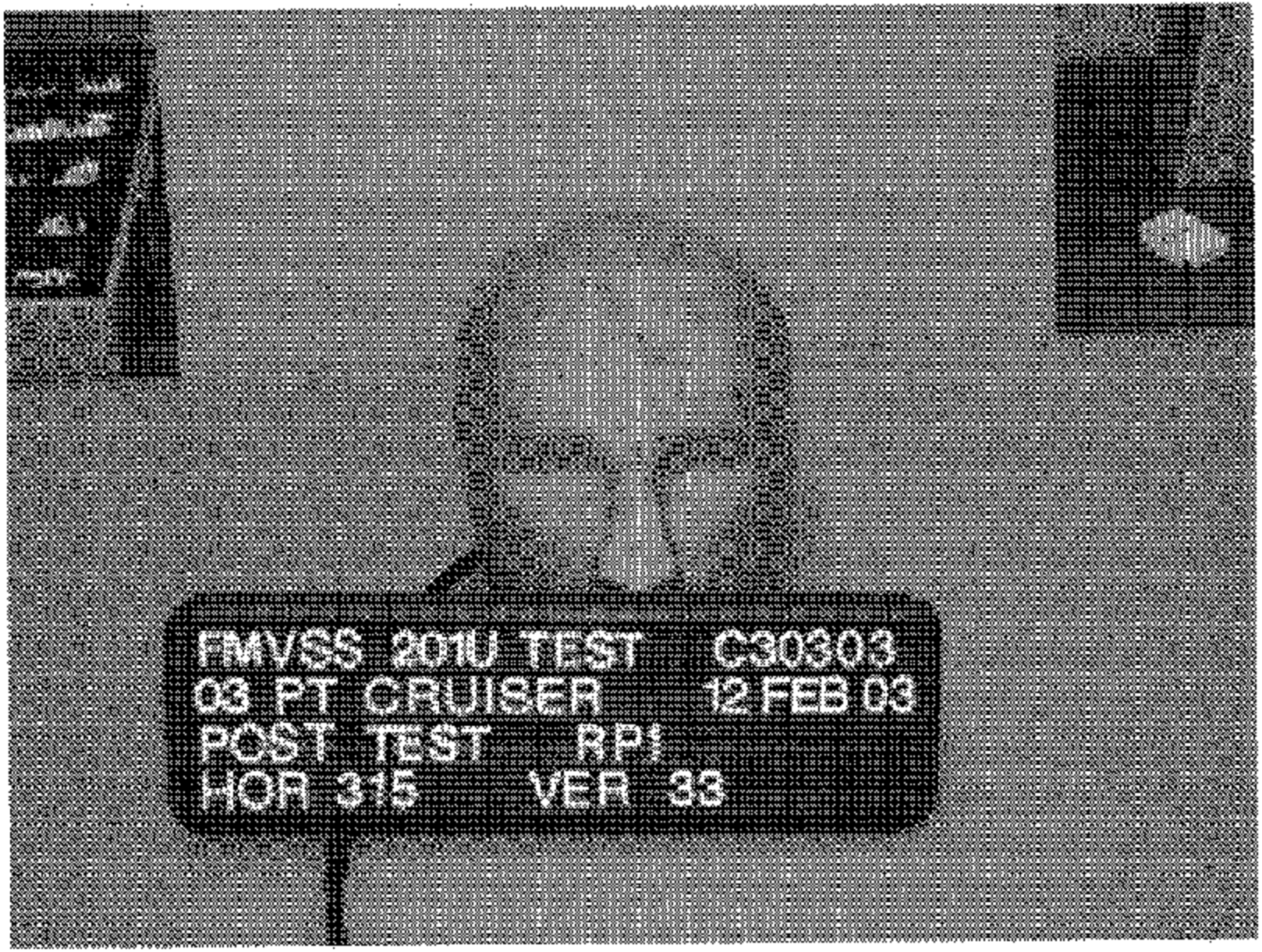


Figure : RP1 HEADFORM

APPENDIX A

PHOTOGRAPHS

PHOTOGRAPHS

FIGURE	VIEW
A-1	LEFT SIDE VIEW OF VEHICLE
A-2	RIGHT SIDE VIEW OF VEHICLE
A-3	3/4 FRONTAL VIEW FROM LEFT SIDE OF VEHICLE
A-4	3/4 REAR VIEW FROM RIGHT SIDE OF VEHICLE
A-5	VEHICLE CERTIFICATION LABEL
A-6	VEHICLE TIRE INFORMATION LABEL
A-7	PRE-TEST DRIVER SIDE A-PILLAR
A-8	PRE-TEST DRIVER SIDE FRONT HEADER
A-9	PRE-TEST DRIVER SIDE SIDE RAIL
A-10	PRE-TEST DRIVER SIDE B-PILLAR
A-11	PRE-TEST DRIVER SIDE OTHER PILLAR
A-12	PRE-TEST DRIVER SIDE REAR PILLAR
A-13	PRE-TEST PASSENGER SIDE A-PILLAR
A-14	PRE-TEST PASSENGER SIDE FRONT HEADER
A-15	PRE-TEST PASSENGER SIDE SIDE RAIL
A-16	PRE-TEST PASSENGER SIDE B-PILLAR
A-17	PRE-TEST PASSENGER SIDE OTHER PILLAR
A-18	PRE-TEST PASSENGER SIDE REAR PILLAR
A-19	POST-TEST DRIVER SIDE A-PILLAR
A-20	POST-TEST DRIVER SIDE FRONT HEADER
A-21	POST-TEST DRIVER SIDE SIDE RAIL
A-22	POST-TEST DRIVER SIDE B-PILLAR
A-23	POST-TEST DRIVER SIDE OTHER PILLAR
A-24	POST-TEST DRIVER SIDE REAR PILLAR
A-25	POST-TEST PASSENGER SIDE A-PILLAR
A-26	POST-TEST PASSENGER SIDE FRONT HEADER
A-27	POST-TEST PASSENGER SIDE SIDE RAIL
A-28	POST-TEST PASSENGER SIDE B-PILLAR
A-29	POST-TEST PASSENGER SIDE OTHER PILLAR
A-30	POST-TEST PASSENGER SIDE REAR PILLAR

Figure A-1. LEFT SIDE VIEW OF VEHICLE

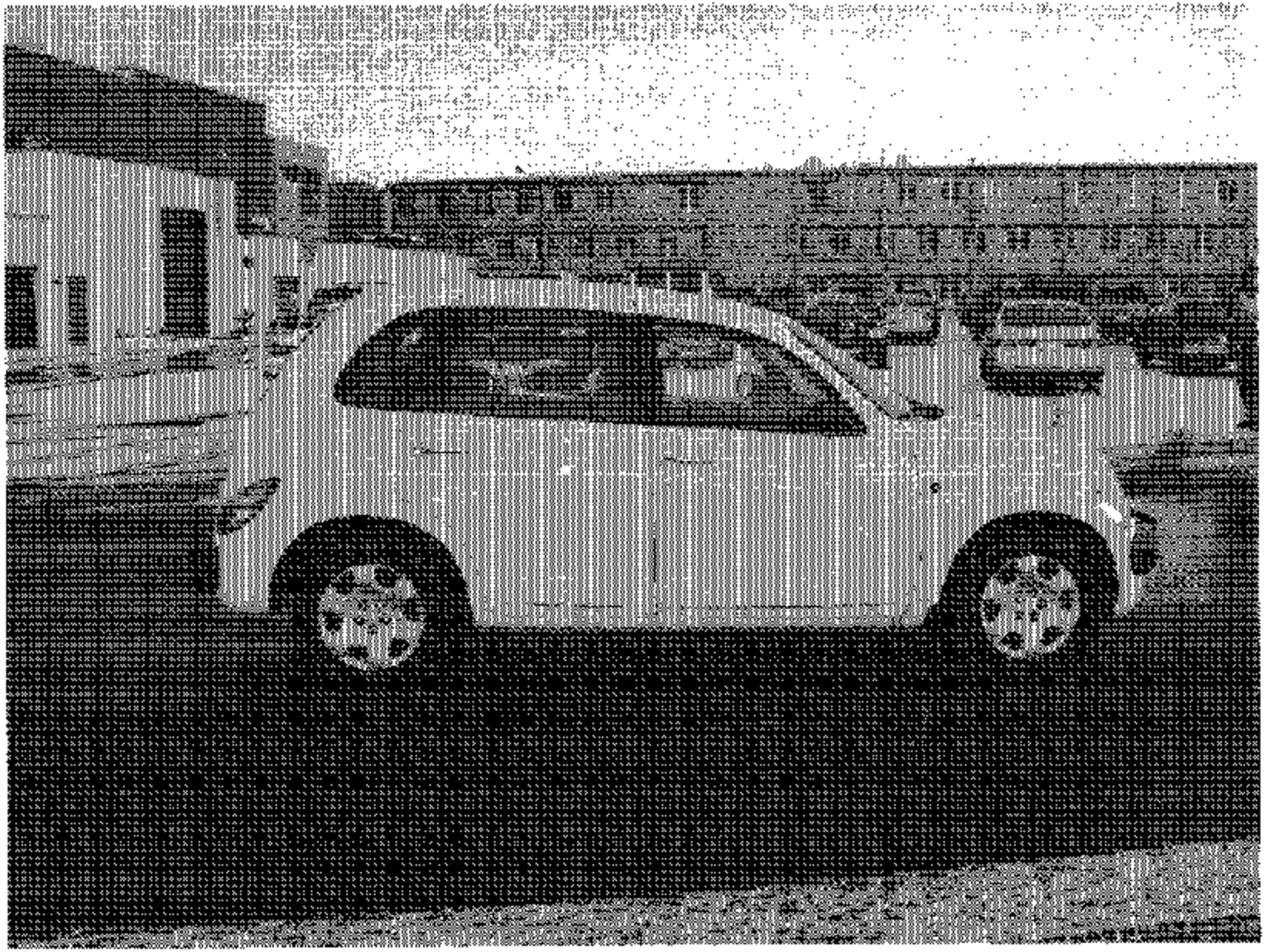


Figure A-2: RIGHT SIDE VIEW OF VEHICLE

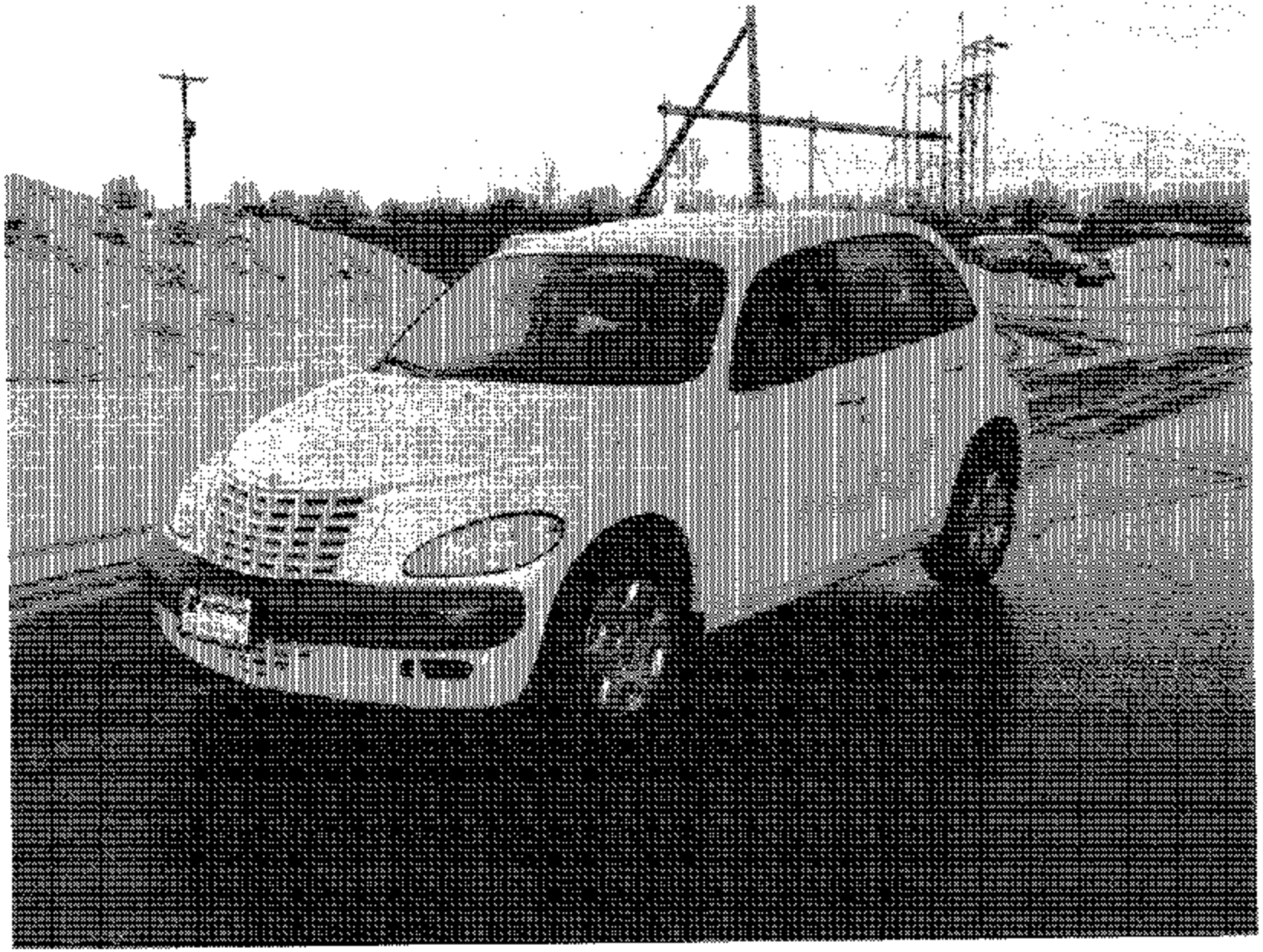


Figure A-3: 3/4 FRONTAL VIEW FROM LEFT SIDE OF VEHICLE

Figure A-4. 3/4 REAR VIEW FROM RIGHT SIDE OF VEHICLE

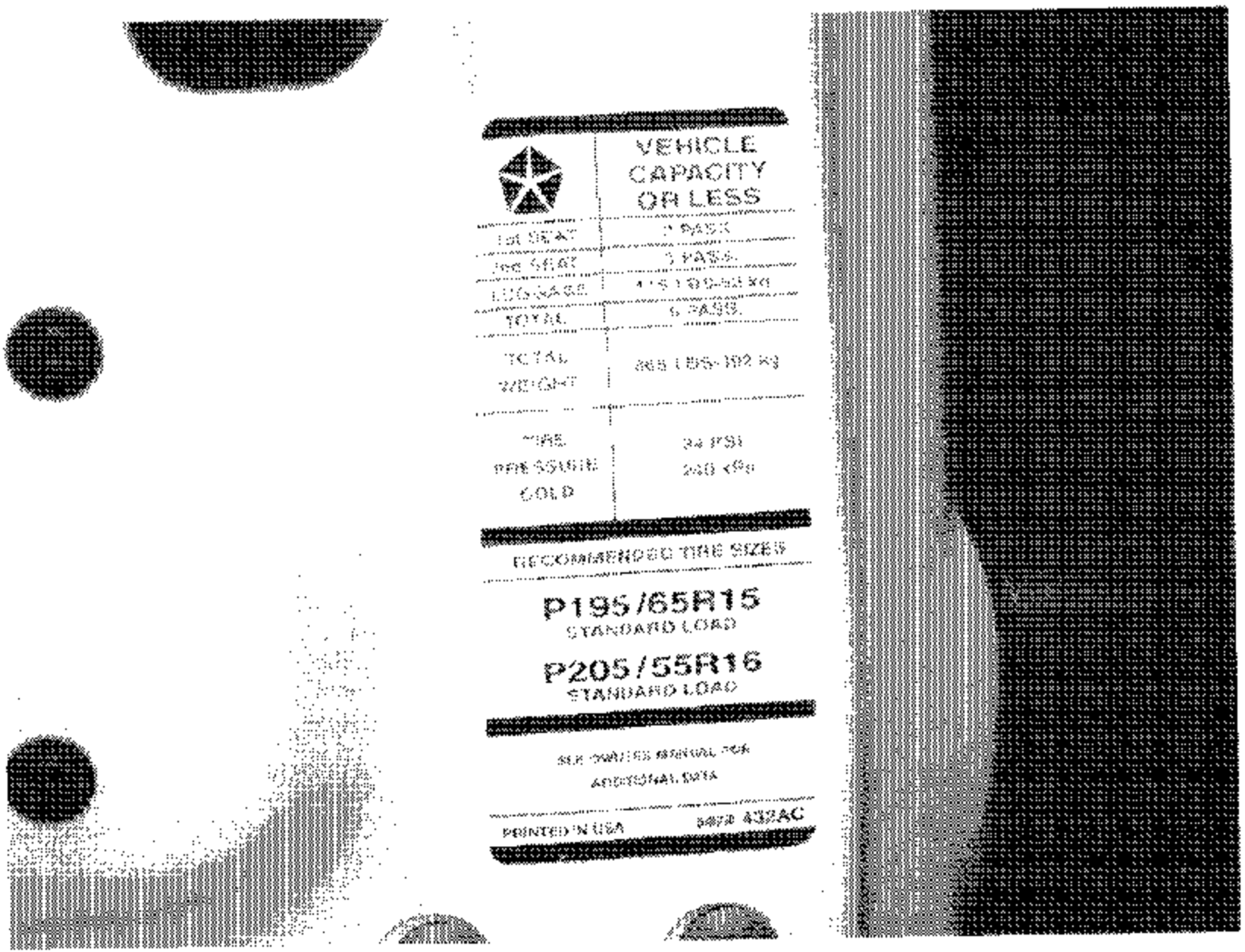


Figure A-5: VEHICLES TIRE INFORMATION LABEL

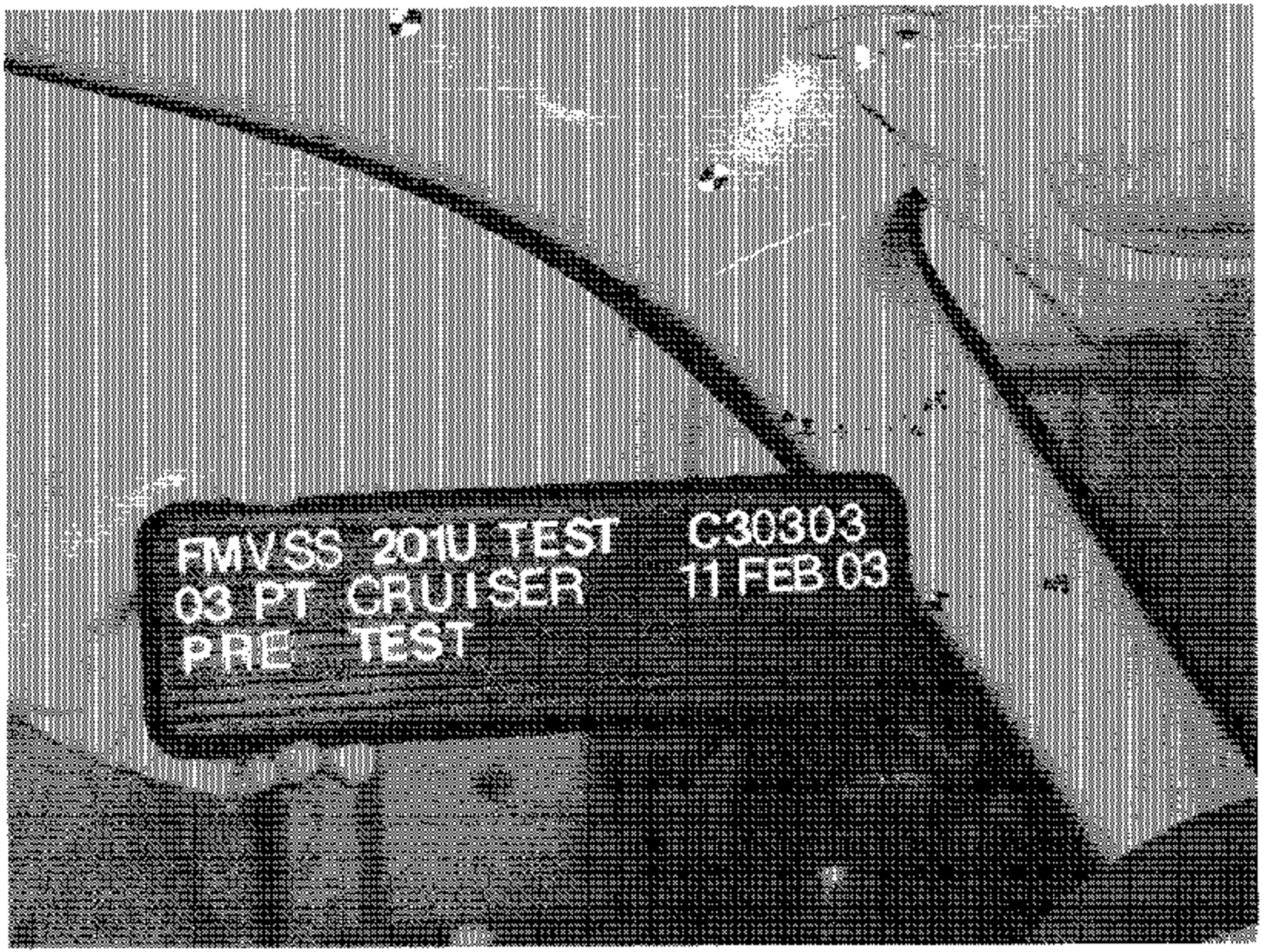


Figure A-2: PRE-TEST DRIVER SIDE A-PILLAR

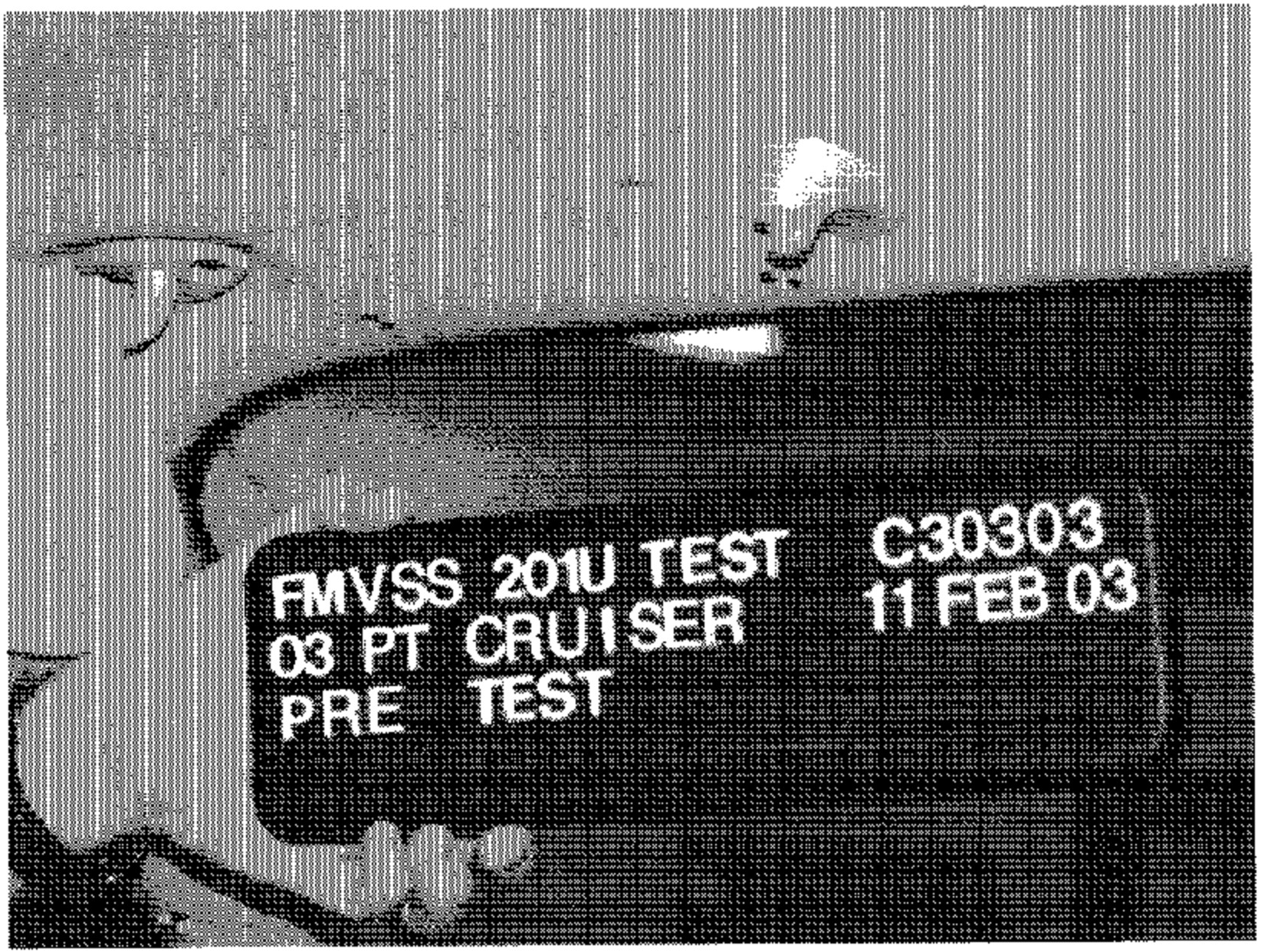


Figure A-8: PRE-TEST DRIVER SIDE FRONT HEADER

R033-TKH (9)

Figure V-9. PRE-TEST DRIVER SIDE SIDE RAIL

Figure A-10: PRE-TEST DRIVER SIDE B-PILLAR

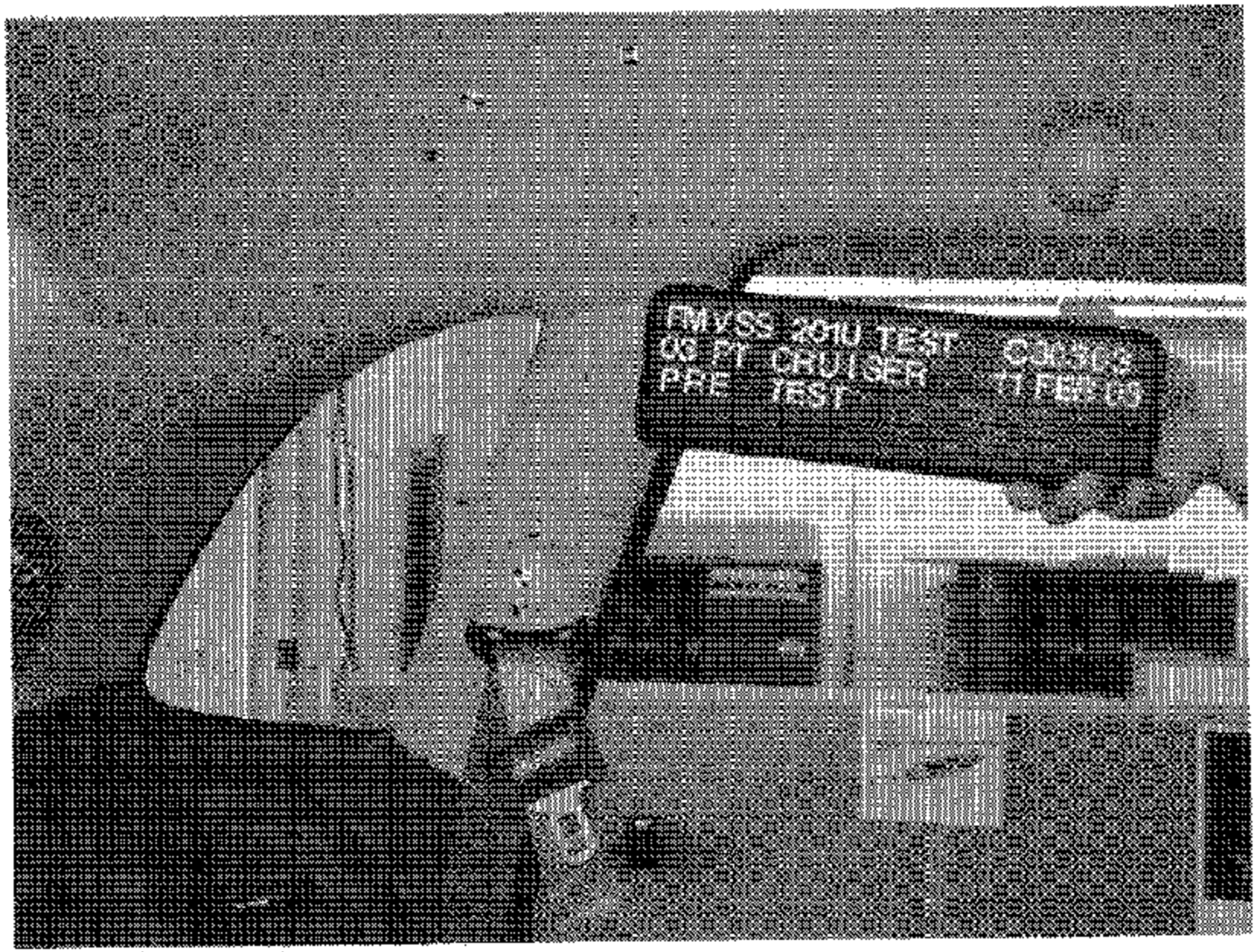


Figure A-11: PRE-TEST DRIVER SIDE OTHER PILLAR

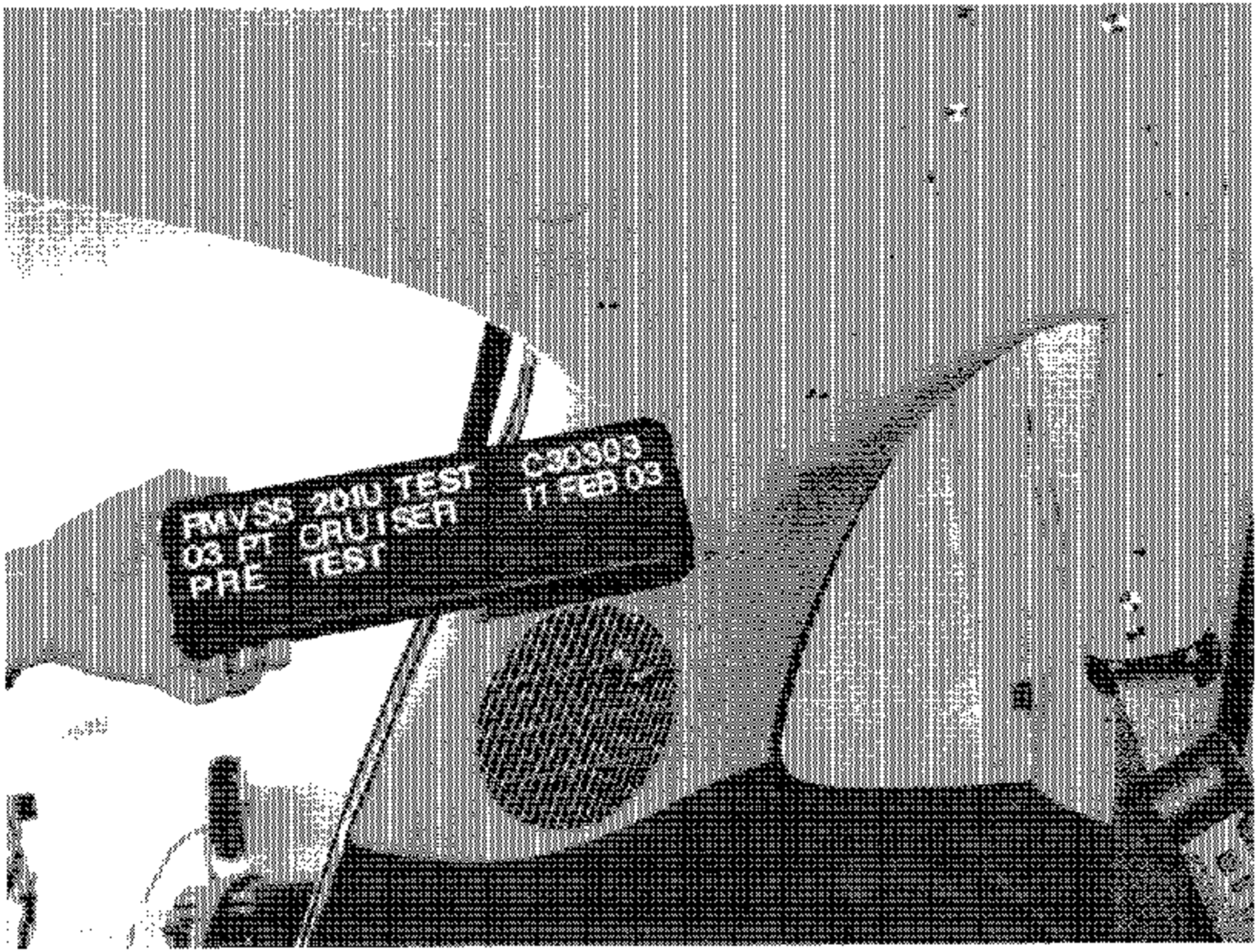


Figure A-13 PRE-TEST DRIVER SIDE REAR PILLAR

Figure A-13: PRE-TEST PASSENGER SIDE A-PILLAR

Figure A-14. PRE-TEST PASSENGER SIDE FRONT HEADER

Figure A-15 PRE-TEST PASSENGER SIDE SIDE RAIL

Figure A-16: PRE-TEST PASSENGER SIDE B-PILLAR

8655-HMH-10

Figure A-17. PRE-TEST PASSENGER SIDE OTHER PILLAR

Figure A-18: PRE-TEST PASSENGER SIDE REAR PILLAR

Figure A-19. POST-TEST DRIVER SIDE A-PILLAR

Figure A-21. POST TEST DRIVER FRONT HEADER

Figure A-21. POST-TEST DRIVER SIDE SIDE RAIL

Figure A-22 POST-TEST DRIVER SIDE B-PILLAR

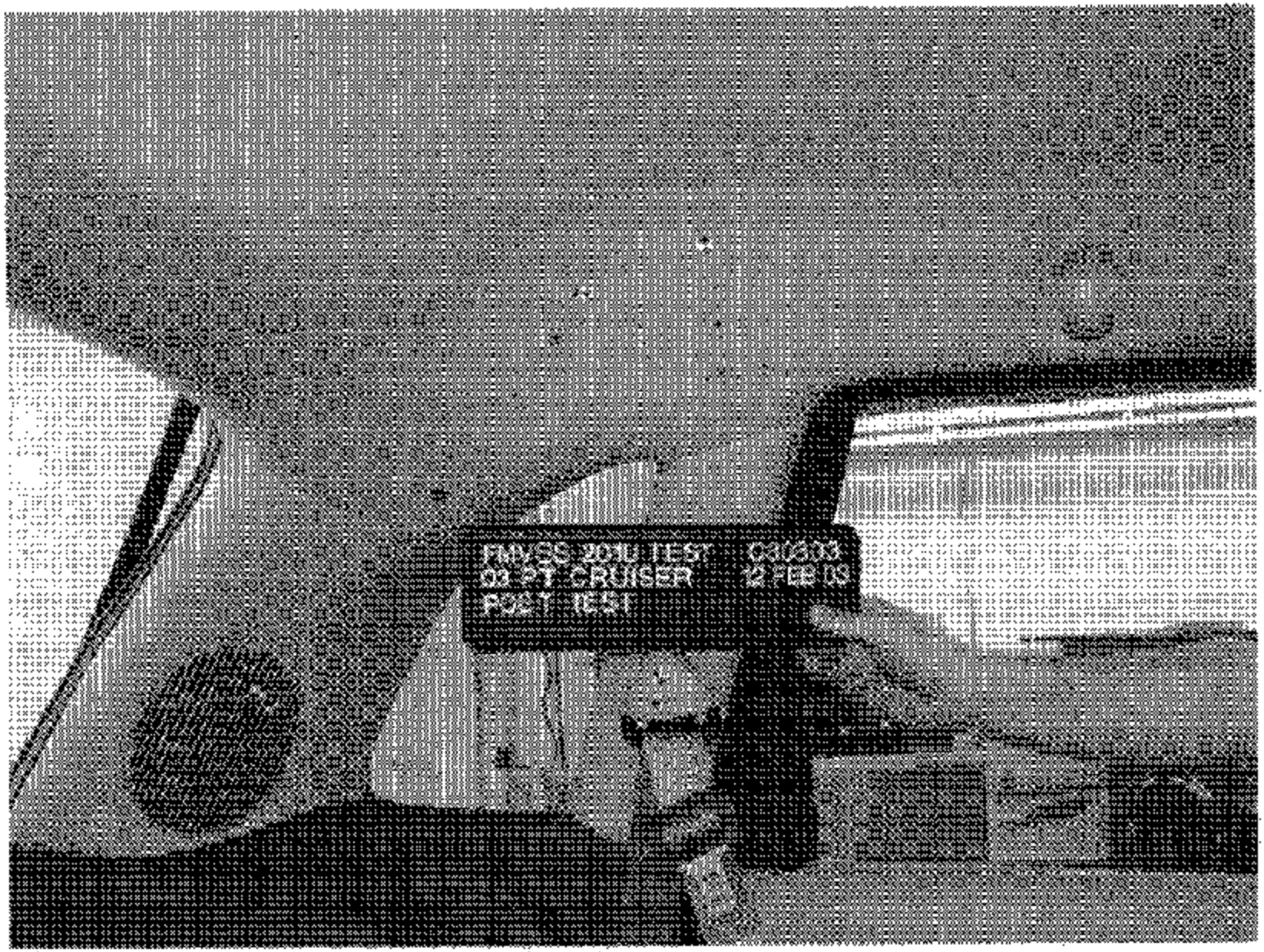


Figure A-23: POST-TEST DRIVER SIDE OTHER PILLAR

Figure A-24: POST-TEST DRIVER SIDE REAR PILLAR

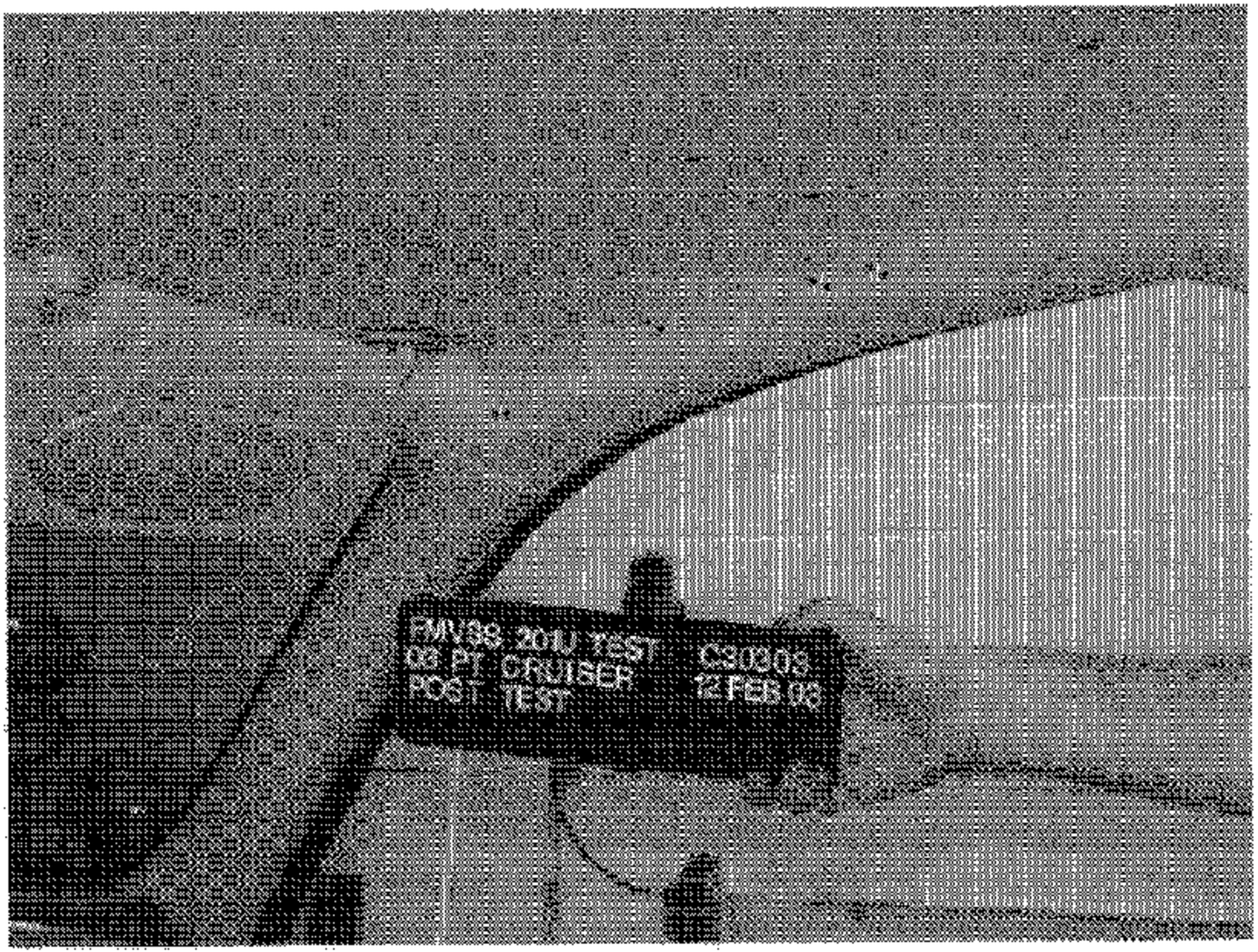


Figure A-25: POST-TEST PASSENGER SIDE A-PILLAR

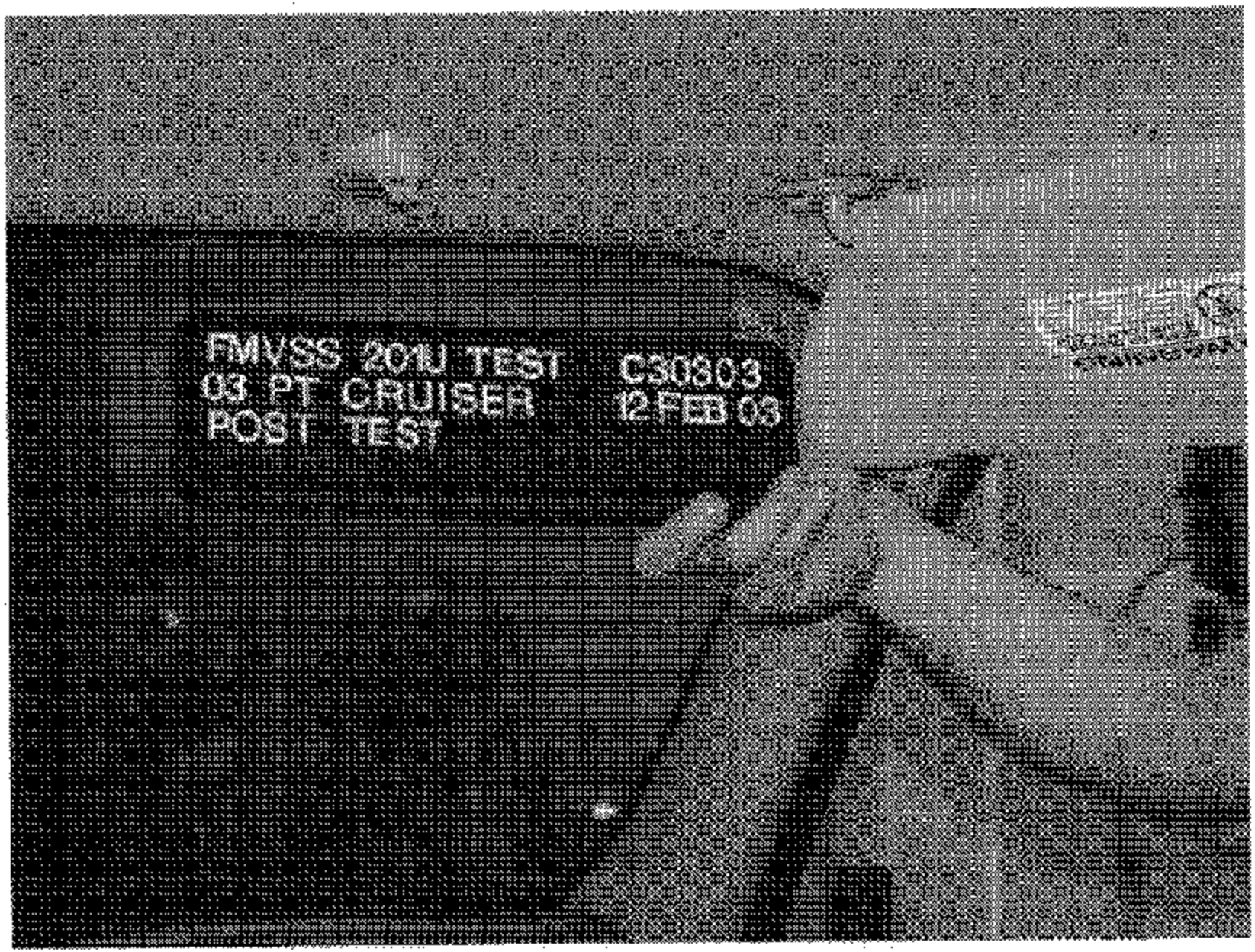


Figure A-26: POST-TEST PASSENGER FRONT HEADER

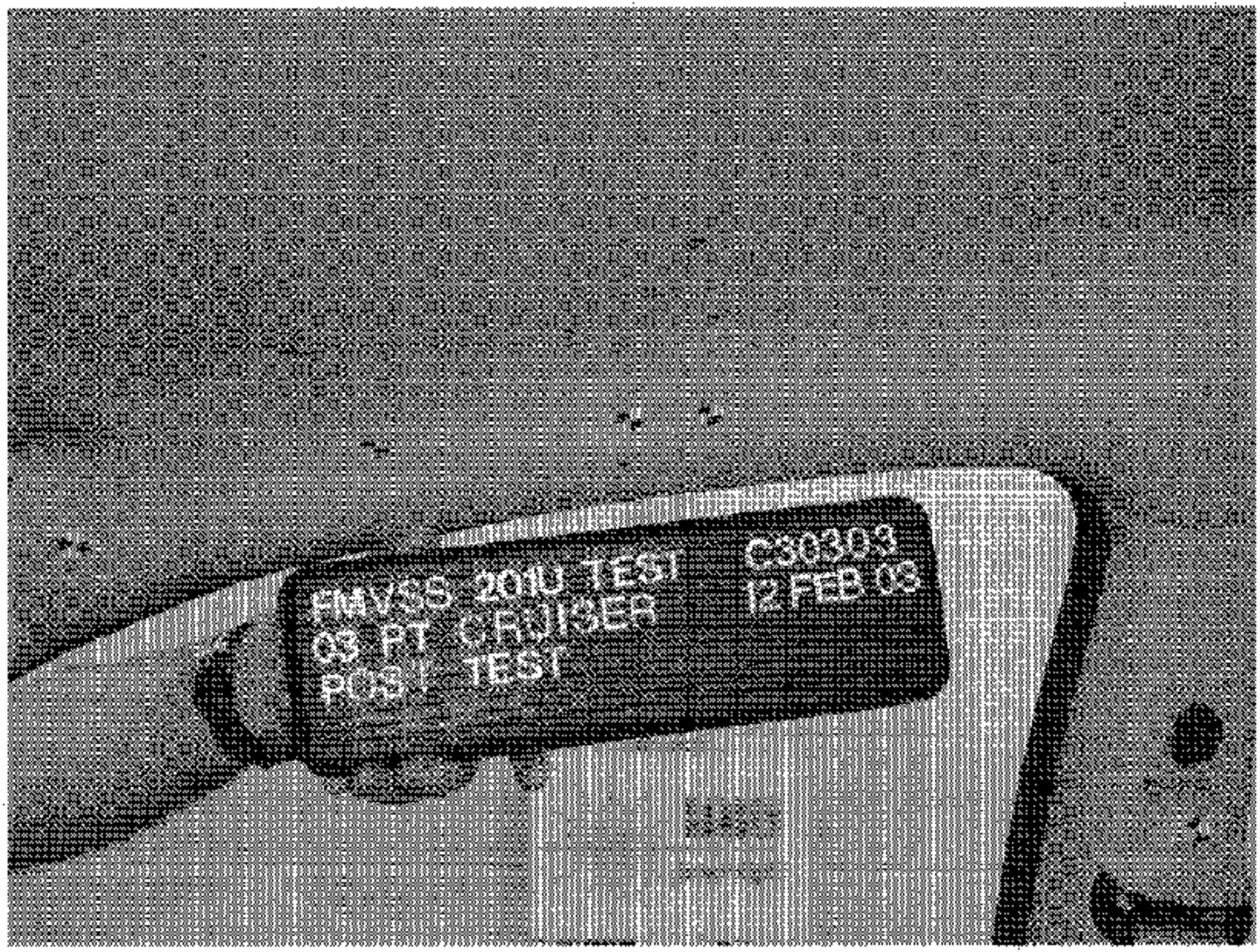


Figure A-27: POST-TEST PASSENGER SIDE SIDE RAIL

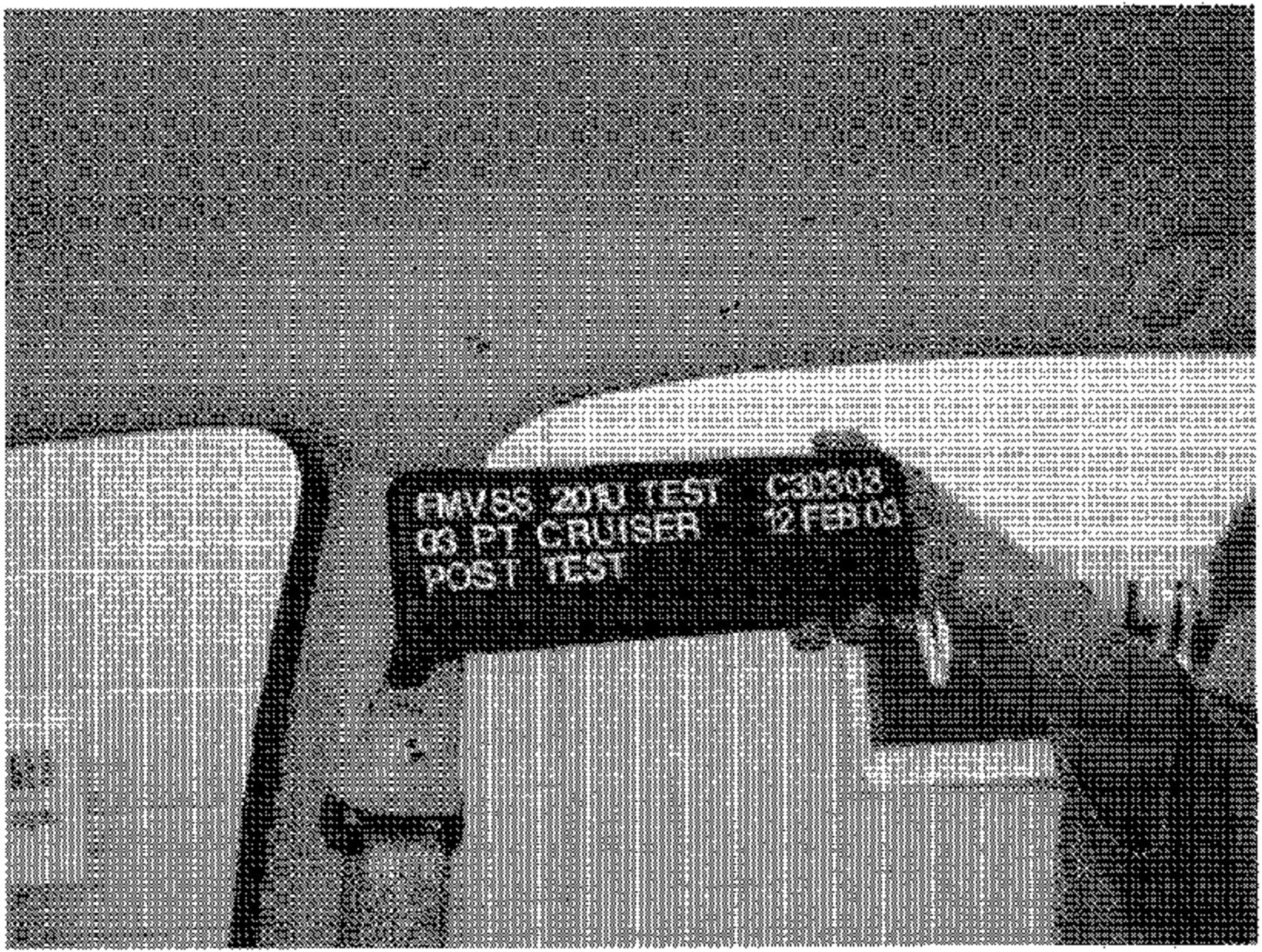


Figure A-28: POST-TEST PASSENGER SIDE B-PILLAR

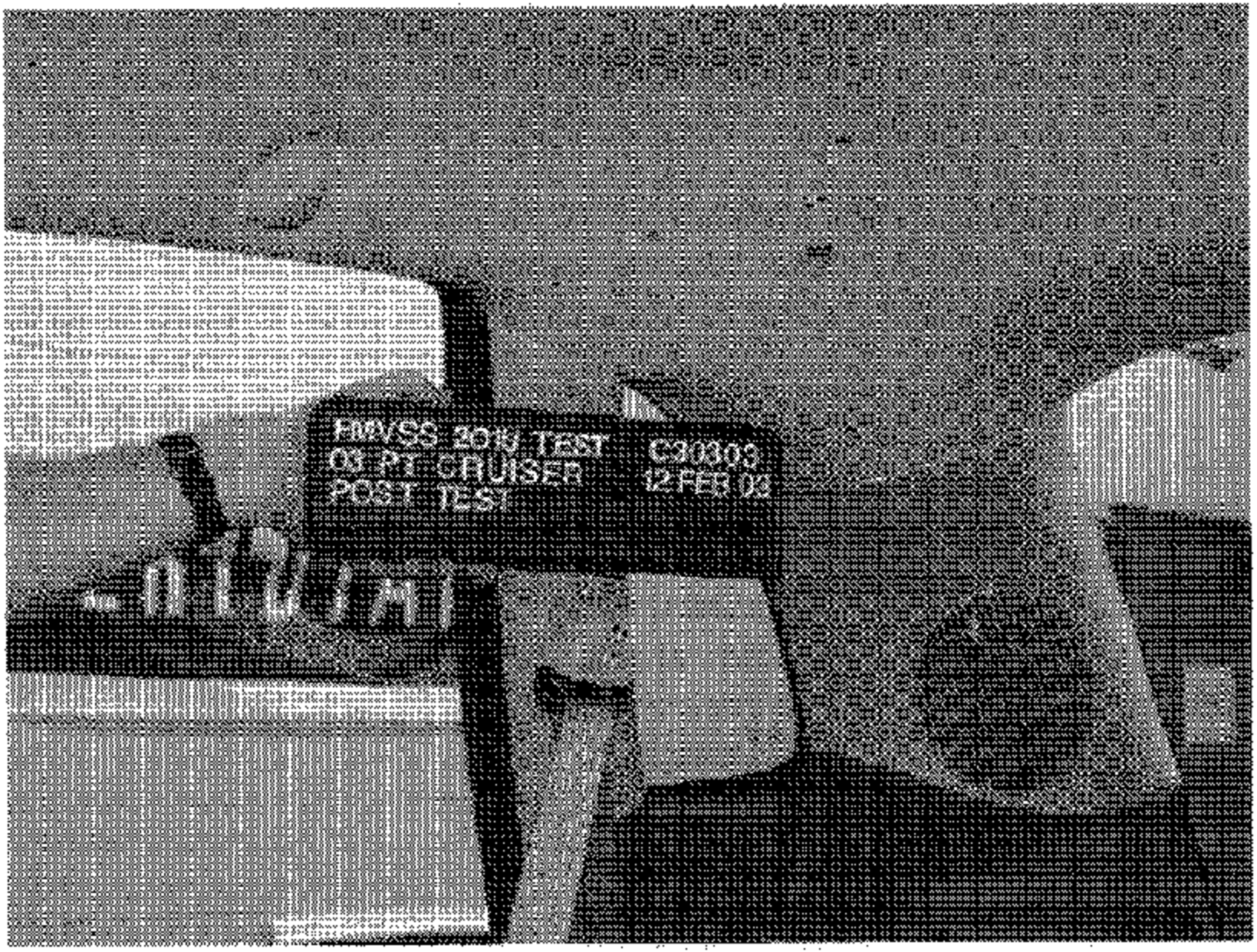


Figure A-29: POST-TEST PASSENGER SIDE OUTER PILLAR

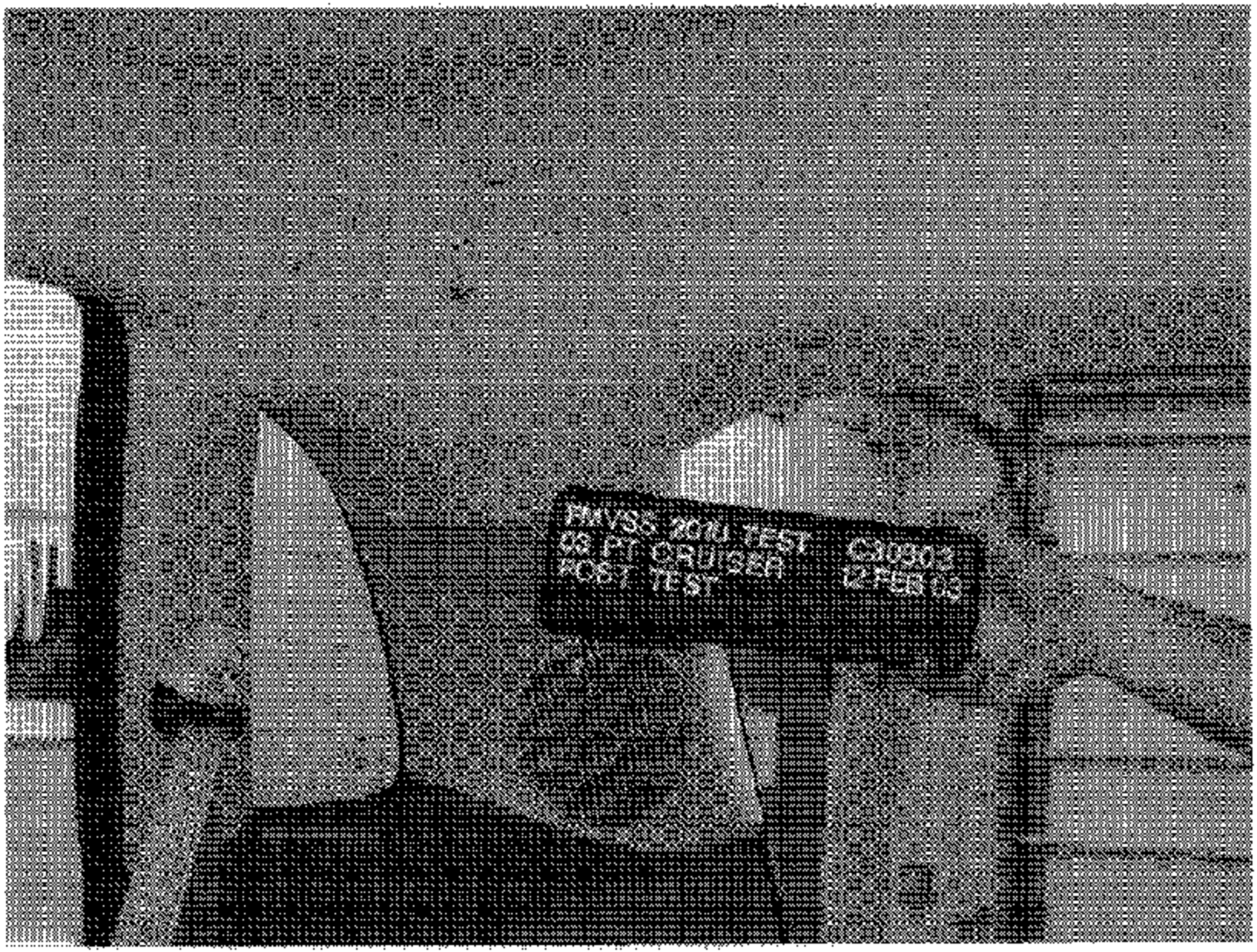


Figure A-30: POST-TEST PASSENGER SIDE REAR PILLAR

APPENDIX B

PART 572: PERFORMANCE CALIBRATION IN SUPPORT OF VEHICLE SAFETY COMPLIANCE TESTING FOR OCCUPANT PROTECTION IN INTERIOR IMPACT

Appendix B contains the results from certification tests performed on the Free Motion Headforms utilized in this test program. The results indicate that the headforms meet all of the performance specifications given in 49 CFR Part 572 Subpart L.

The tests were conducted at the Dummy Certification Test Facility of Veridian Engineering. A summary of the test results are included in this Appendix.

PART 5721
HEAD DROP PRE-TEST

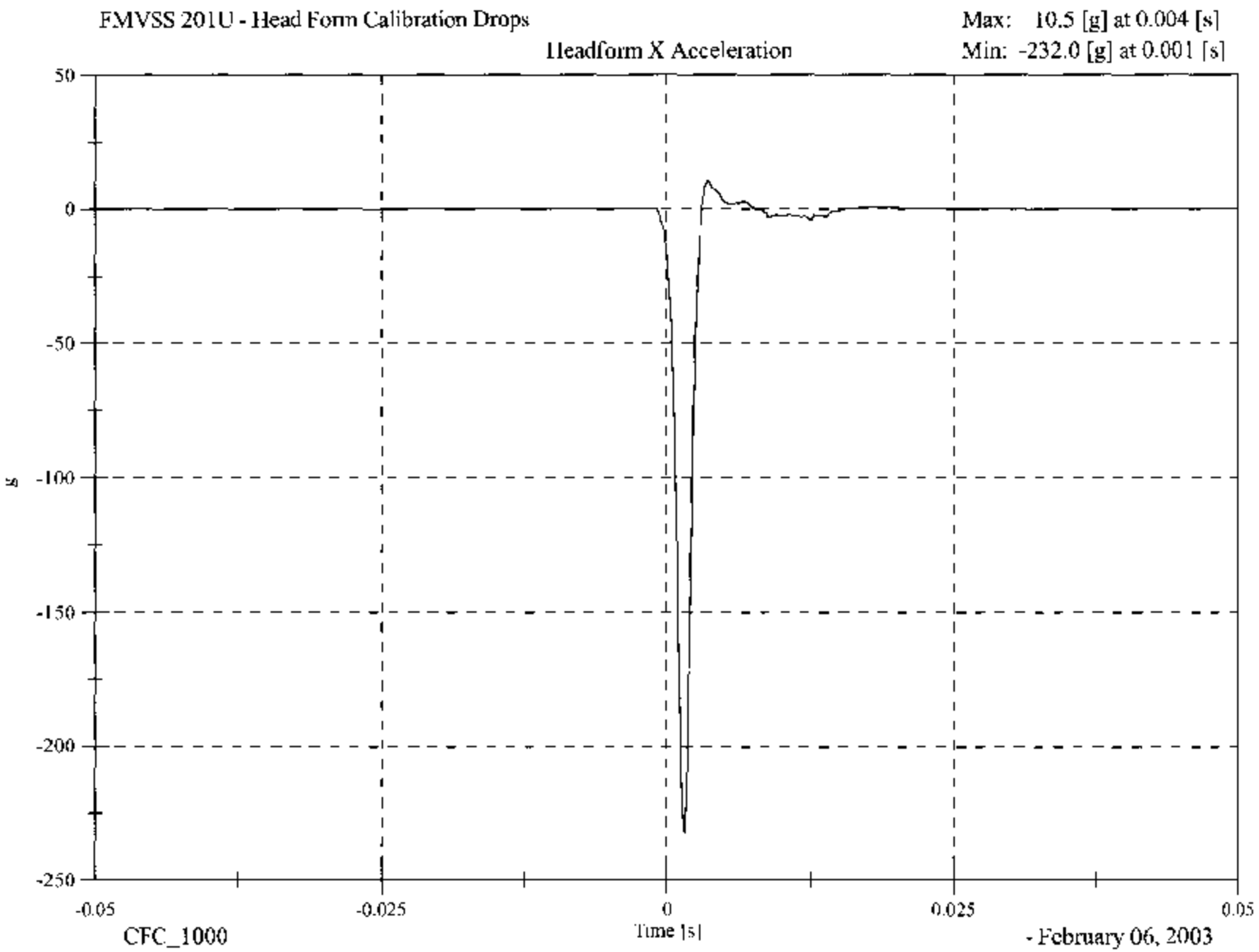
MANUFACTURER:	FIRST TECHNOLOGIES SAFETY SYSTEMS	
SERIAL NUMBER:	0642	
CALIBRATION DATE:	February 6, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	23
RELATIVE HUMIDITY	10% to 70%	33
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	255.7
PEAK LATERAL ACCELERATION	15 Gs Maximum	2.3
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

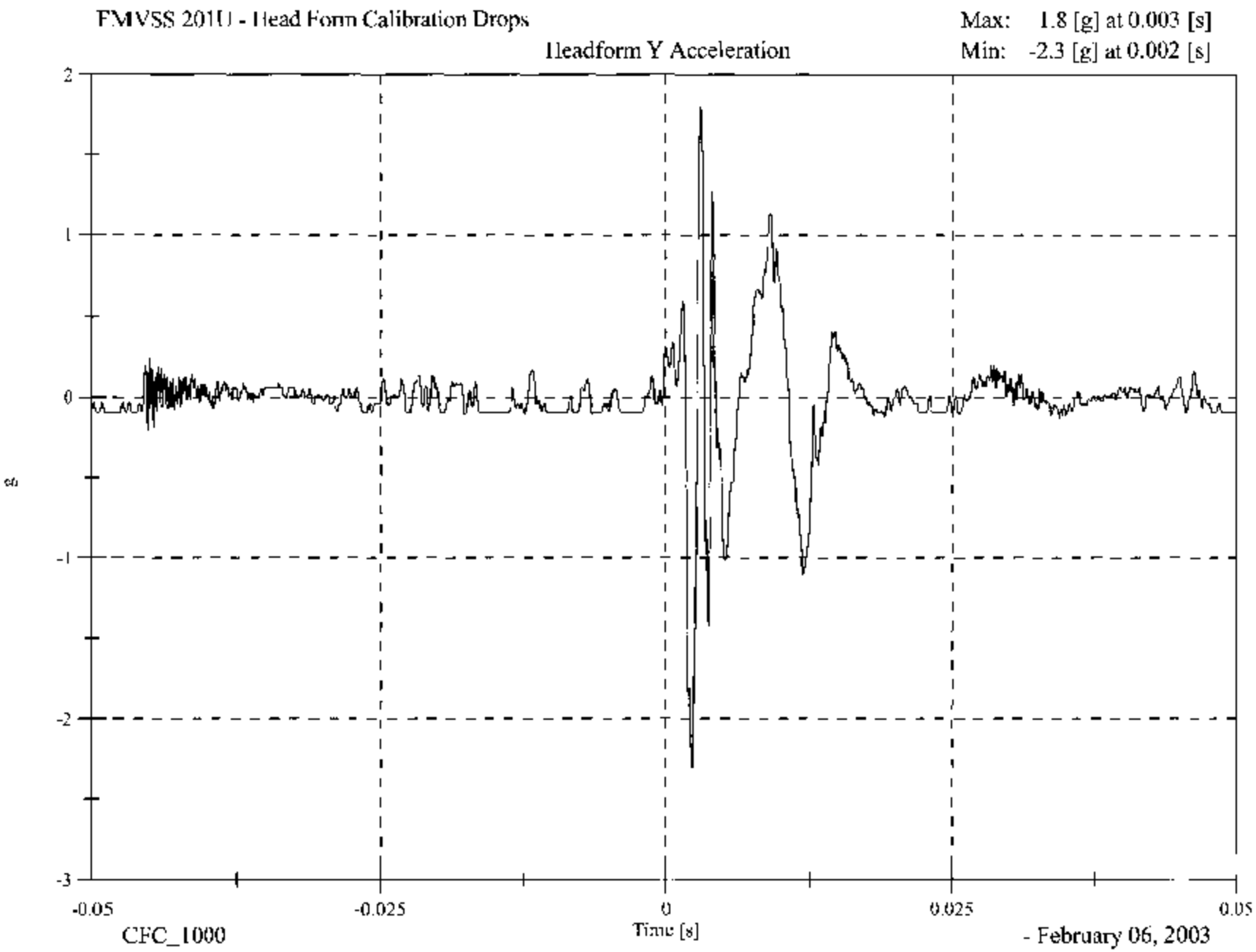
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J24876	9/02	3/03
2 - LATERAL	ENDEVCO	7264-2000T	J33030	9/02	3/03
3 - VERTICAL	ENDEVCO	7264-2000T	J31039	9/02	3/03

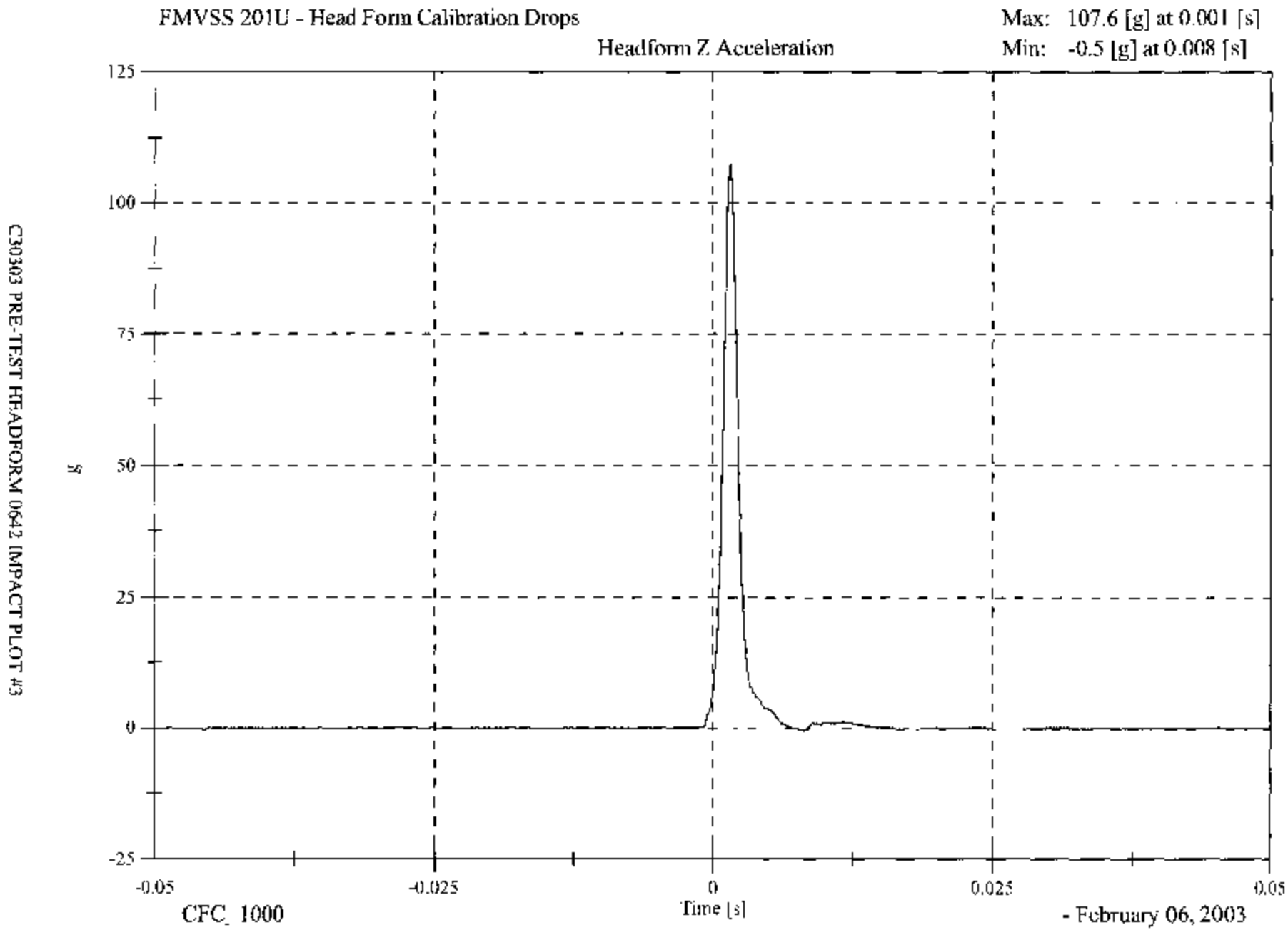
REMARKS:

C30303 PRE-TEST HEADFORM 0642 IMPACT PLOT #1



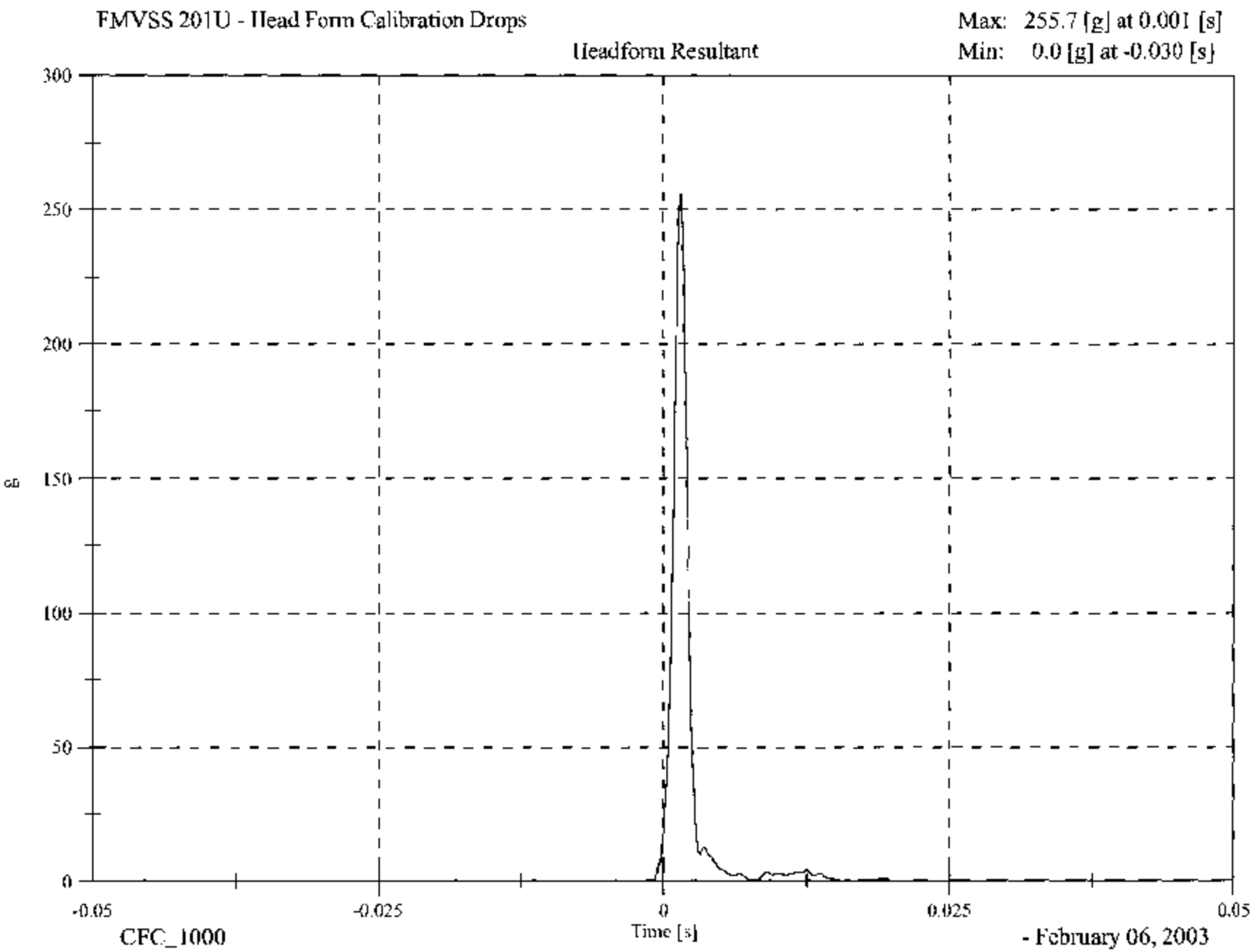
C30303 PRE-TEST HEADFORM 0642 IMPACT PLOT #2





C30303 PRE-TEST HEADFORM 0642 IMPACT PLOT #3

C30303 PRE-TEST HEADFORM 0642 IMPACT PLOT #4



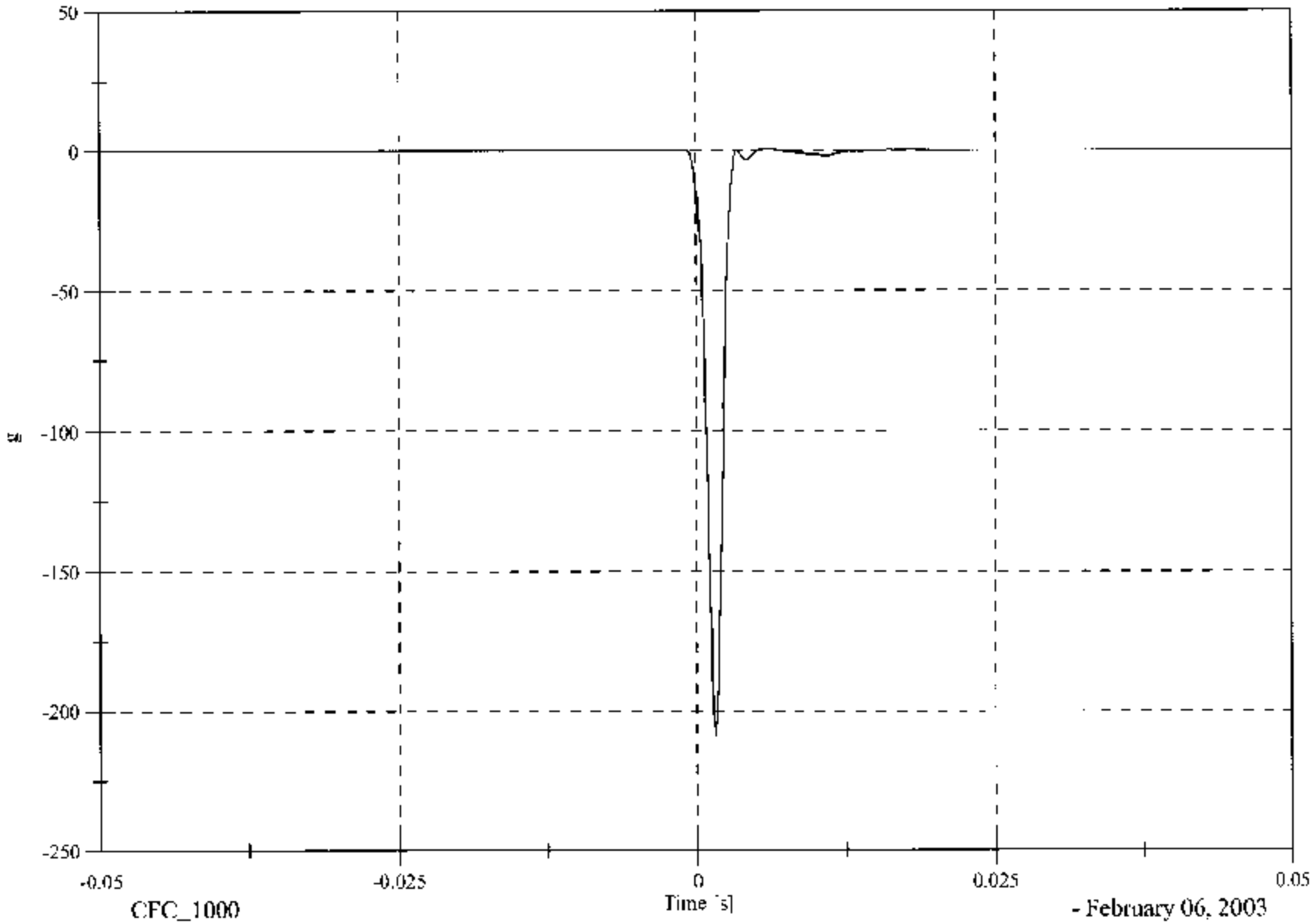
PART 572L
HEAD DROP PRE TEST

MANUFACTURER:	FIRST TECHNOLOGIES SAFETY SYSTEMS	
SERIAL NUMBER:	805	
CALIBRATION DATE:	February 6, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 25°C	23
RELATIVE HUMIDITY	10% to 70%	13
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	234.9
PEAK LATERAL ACCELERATION	15 Gs Maximum	3.2
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

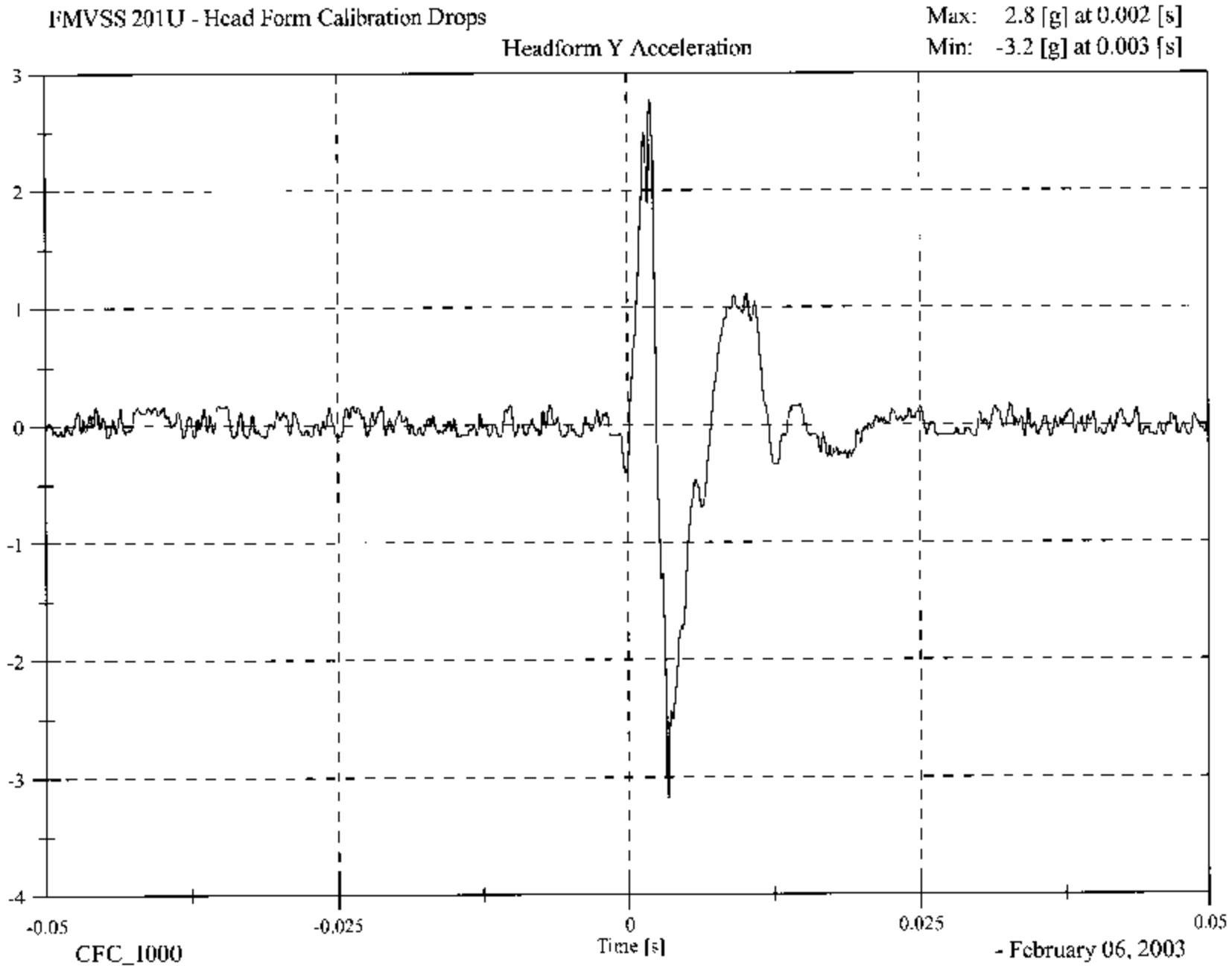
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 LONGITUDINAL	ENDEVCO	7264-2000T	J38127	9/02	3/03
2 LATERAL	ENDEVCO	7264-2000T	J37980	9/02	3/03
3 VERTICAL	ENDEVCO	7264-2000T	J37854	9/02	3/03

REMARKS:

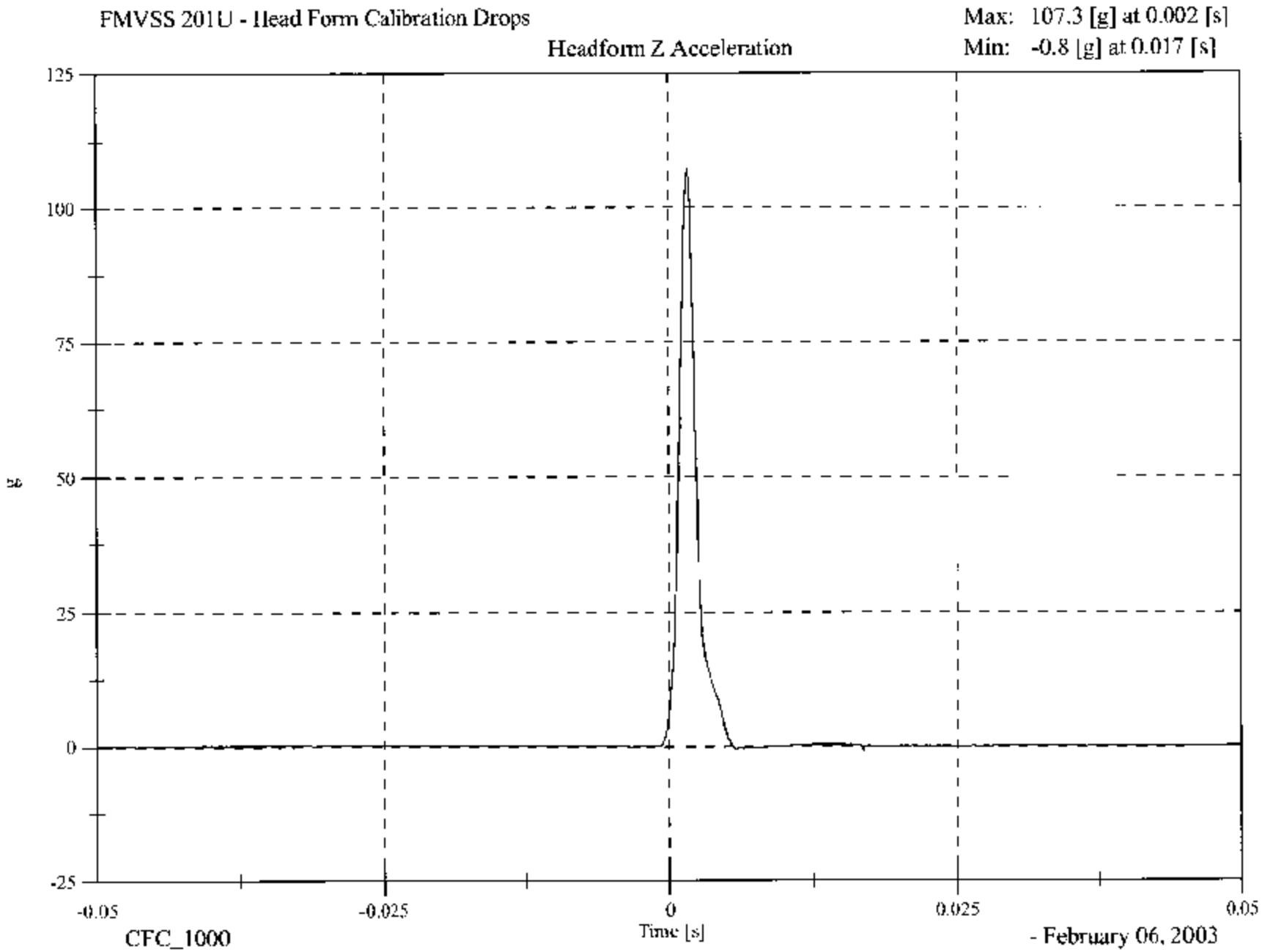


C30303 PRE-TEST HEADFORM 0805 IMPACT PLOT #1

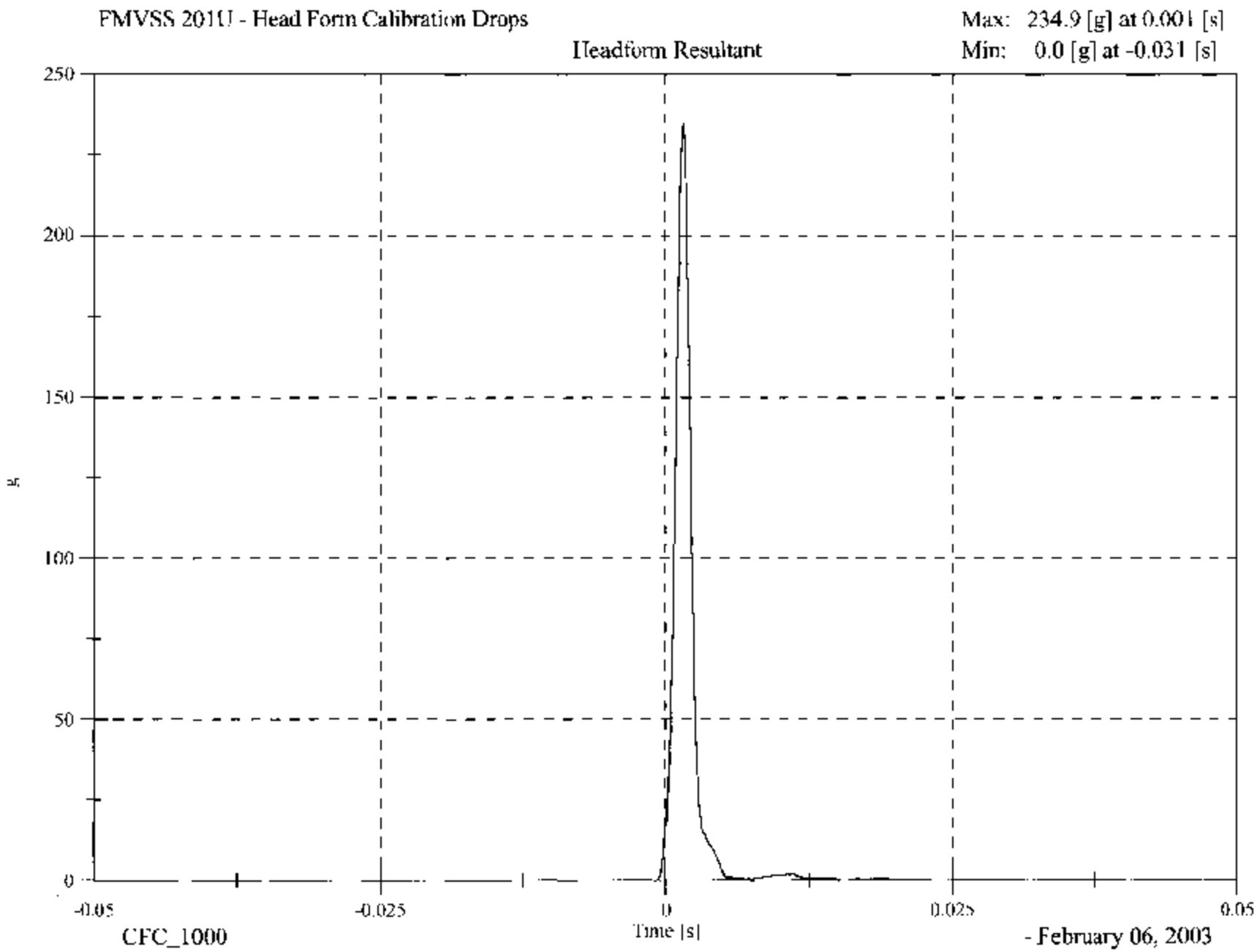
C30303 PRE-TEST HEADFORM 0805 IMPACT PLOT #2



C30303 PRE-TEST HEADFORM 0805 IMPACT PLOT #3



C30303 PRE-TEST HEADFORM 0805 IMPACT PLOT #4



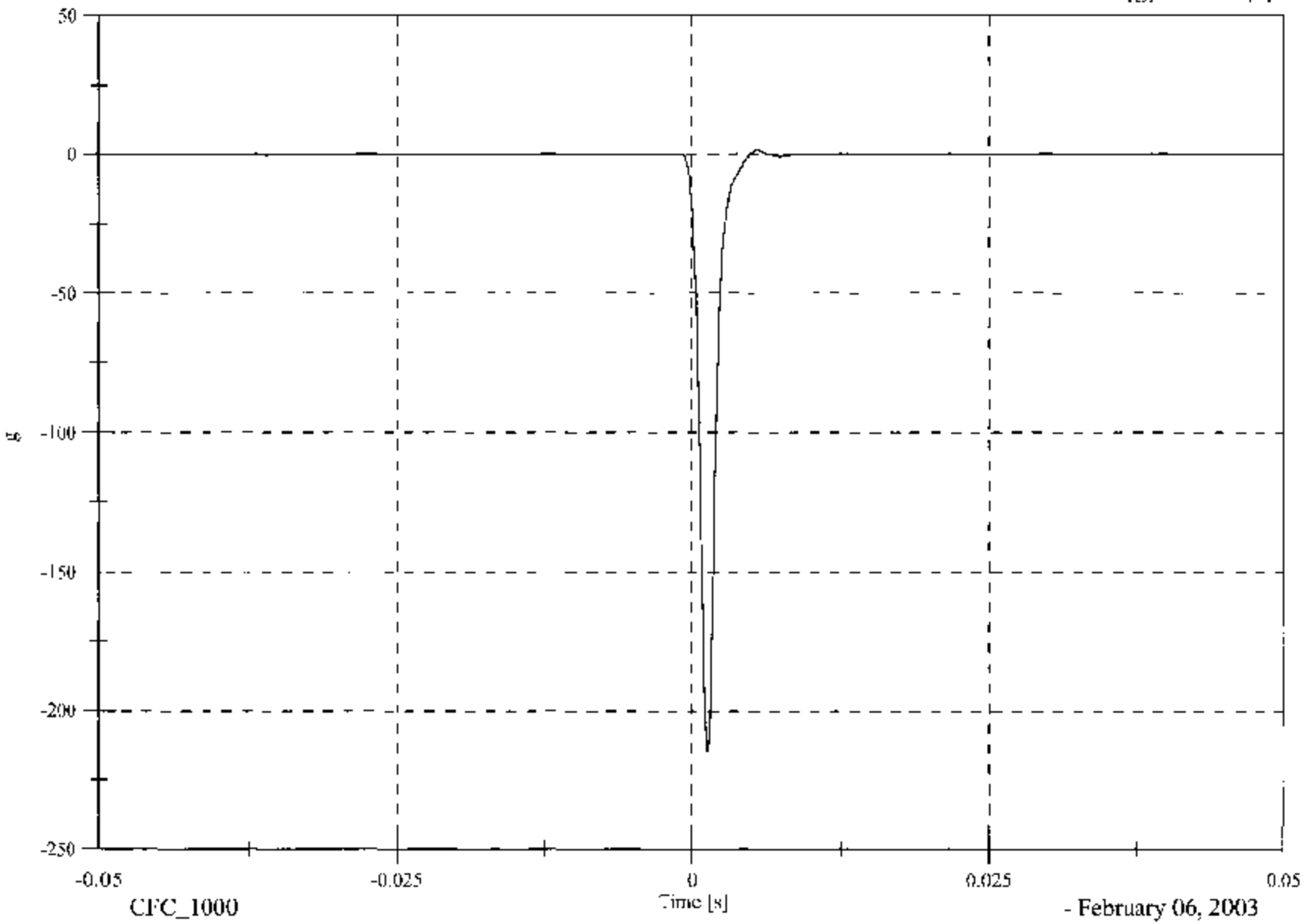
PART 572.
HEAD DROP PRE-TEST

MANUFACTURER:	APPLIED SAFETY TECHNOLOGIES CORPORATION	
SERIAL NUMBER:	002	
CALIBRATION DATE:	February 6, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	23
RELATIVE HUMIDITY	10% to 70%	13
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	245.7
PEAK LATERAL ACCELERATION	15 Gs Maximum	7.4
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000Y	J33127	9/02	3/03
2 - LATERAL	ENDEVCO	7264-2000T	J33039	9/02	3/03
3 - VERTICAL	ENDEVCO	7264-2000T	J32782	9/02	3/03

REMARKS:



C30303 PRE-TEST HEADFORM 0062 IMPACT PLOT # 1

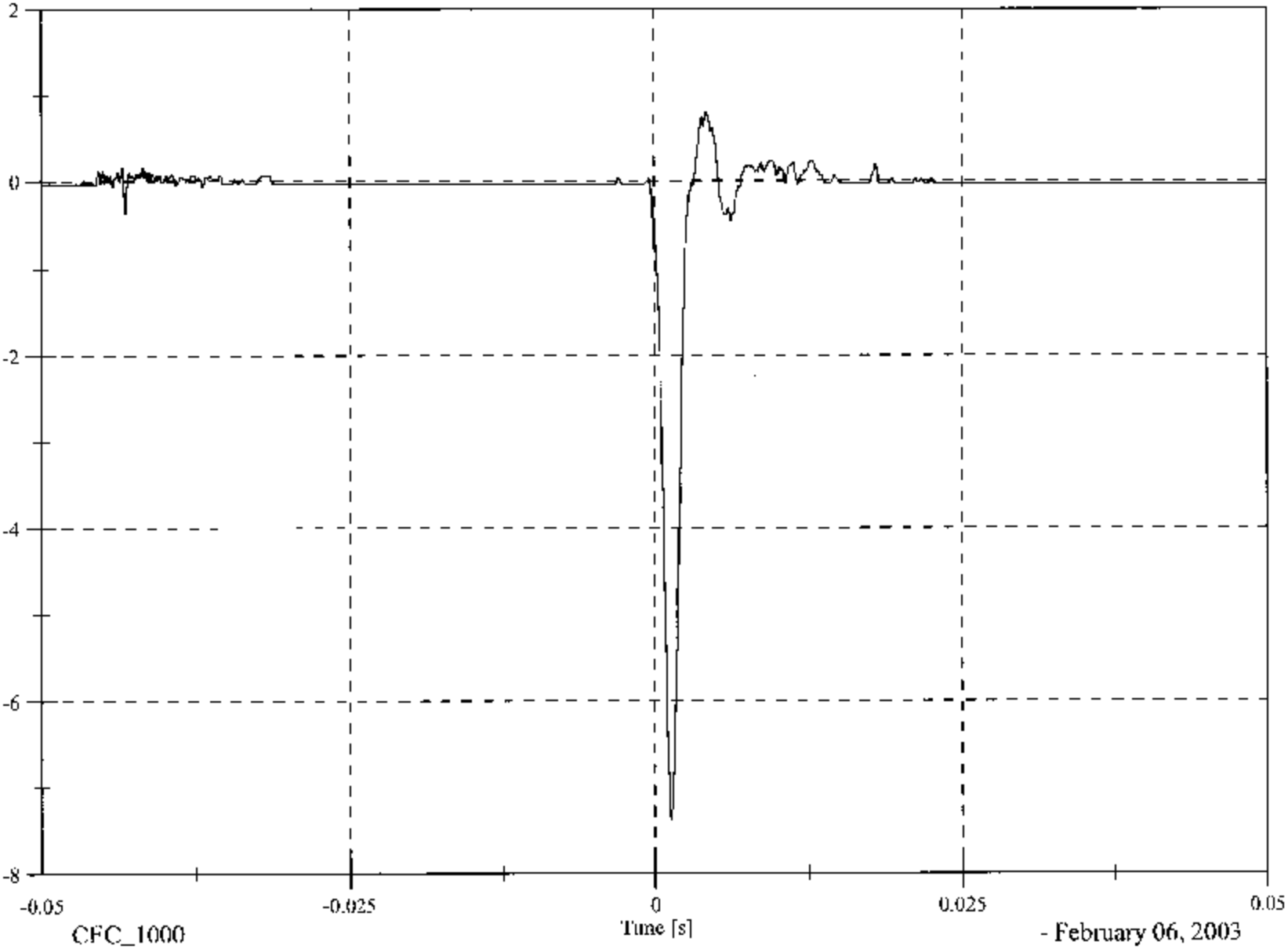
C30303 PRE-TEST HEADFORM 0062 IMPACT PLOT # 2

FMVSS 201U - Head Form Calibration Drops

Headform Y Acceleration

Max: 0.8 [g] at 0.004 [s]

Min: -7.4 [g] at 0.001 [s]



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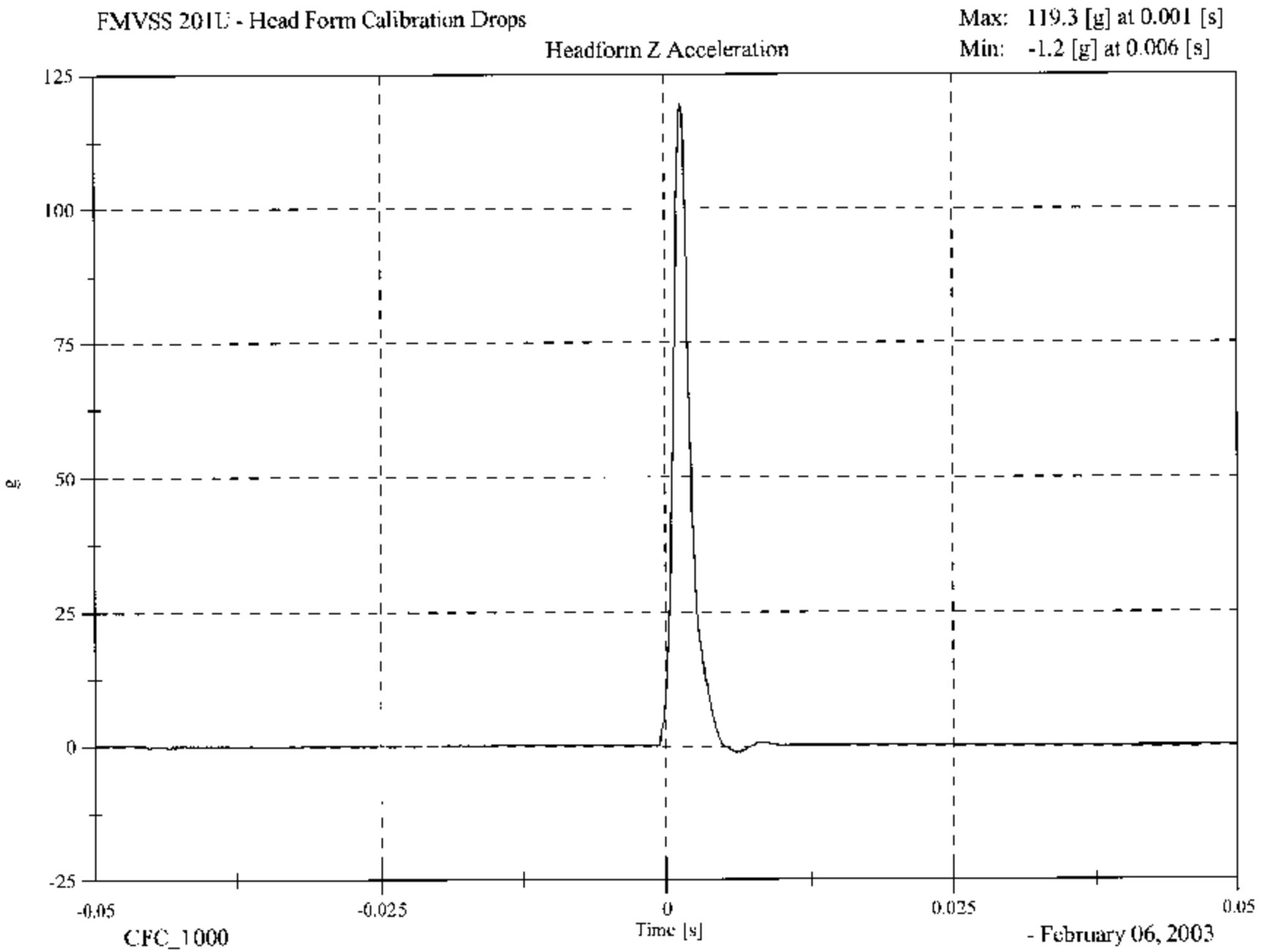
- February 06, 2003



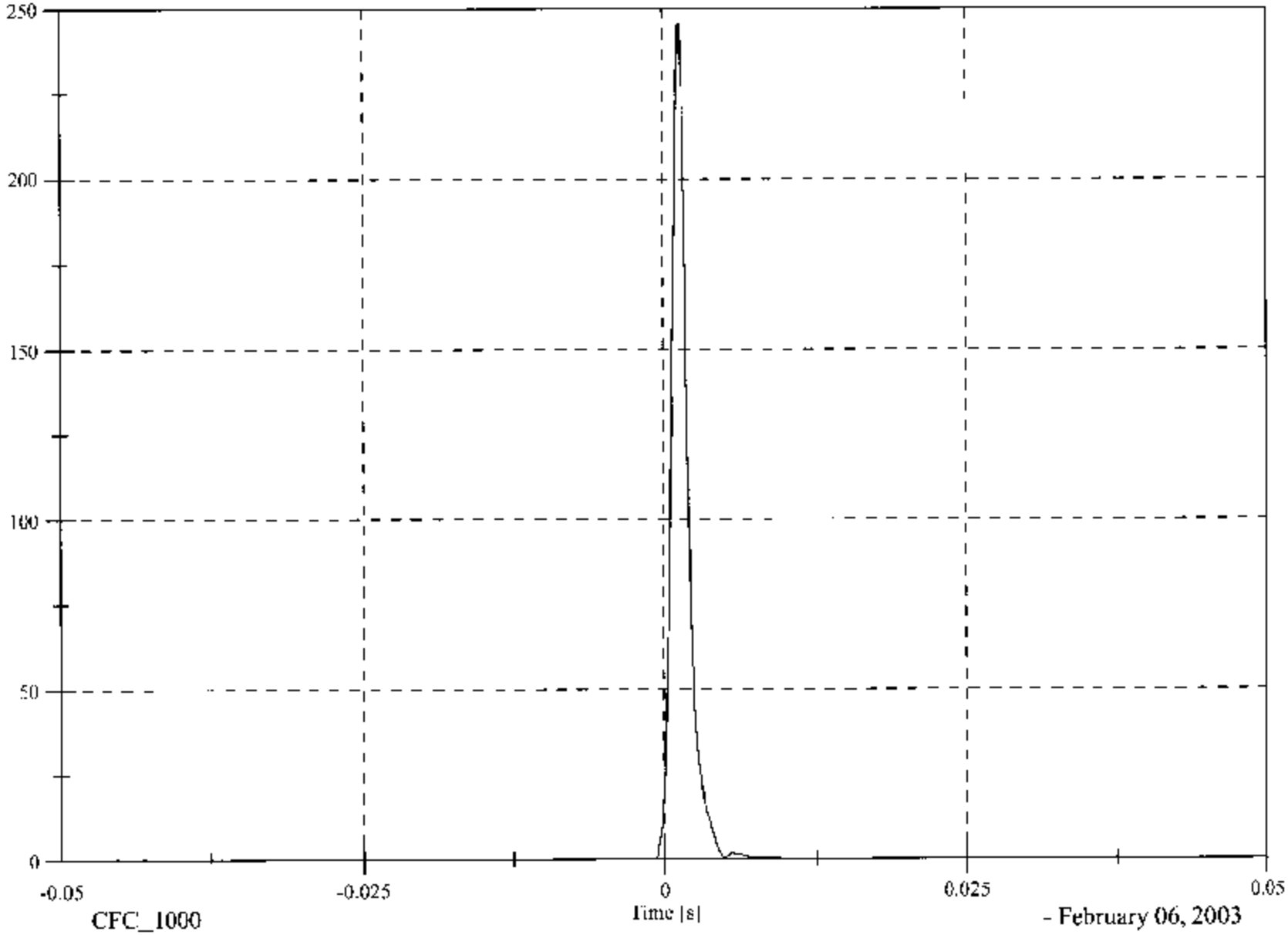
C30303 PRE-TEST HEADFORM 0062 IMPACT PLOT # 3

C30303 PRE-TEST HEADFORM 0062 IMPACT PLOT # 4

FMVSS 201U - Head Form Calibration Drops

Headform Resultant

Max: 245.7 [g] at 0.001 [s]
Min: 0.0 [g] at -0.033 [s]



CFC_1000

- February 06, 2003

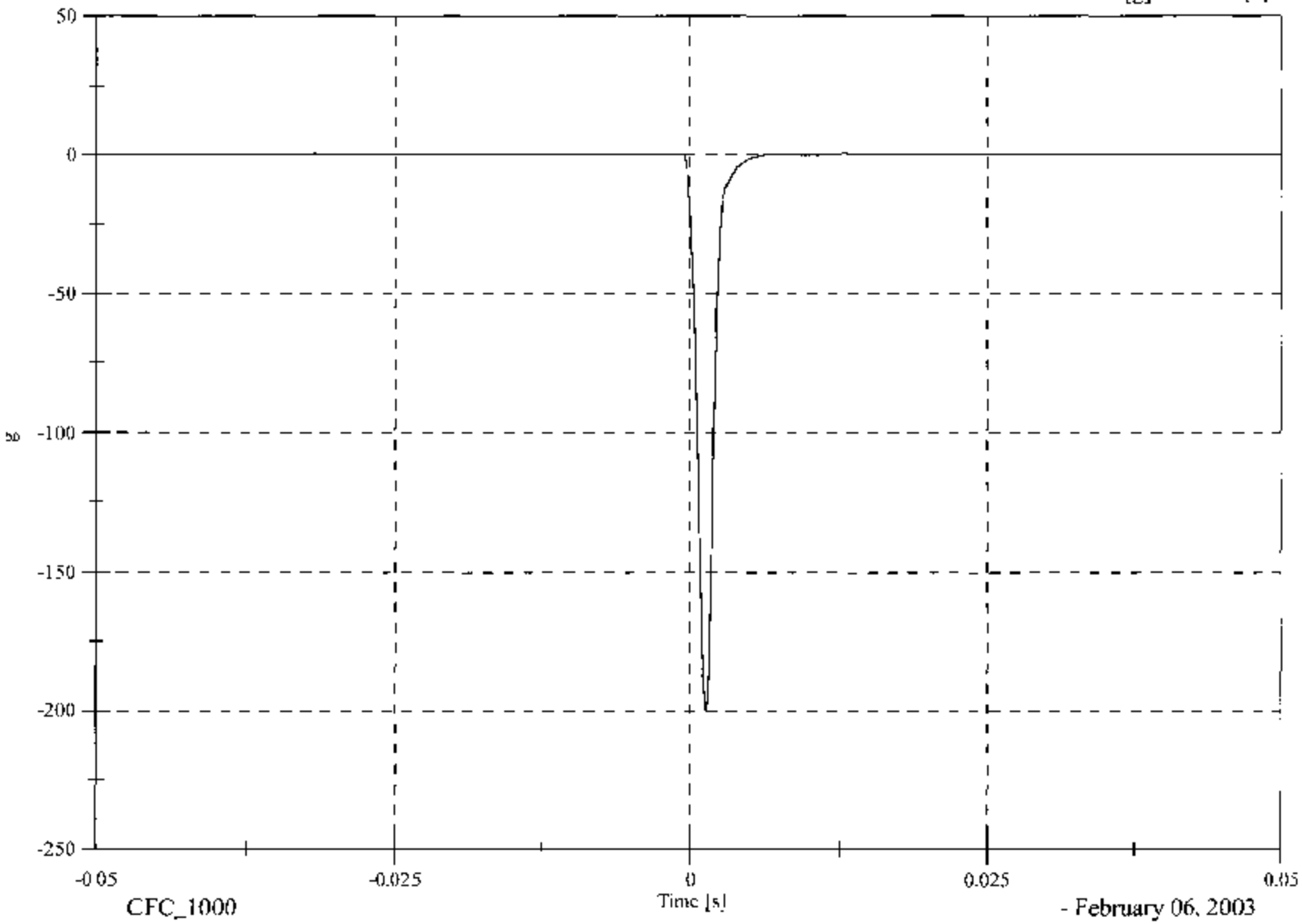
PART 572L
HEAD DROP PRE-TEST

MANUFACTURER	APPLIED SAFETY TECHNOLOGIES CORPORATION	
SERIAL NUMBER:	0355	
CALIBRATION DATE:	February 6, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	23
RELATIVE HUMIDITY	10% to 70%	13
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	228.8
PEAK LATERAL ACCELERATION	15 Gs Maximum	0.7
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

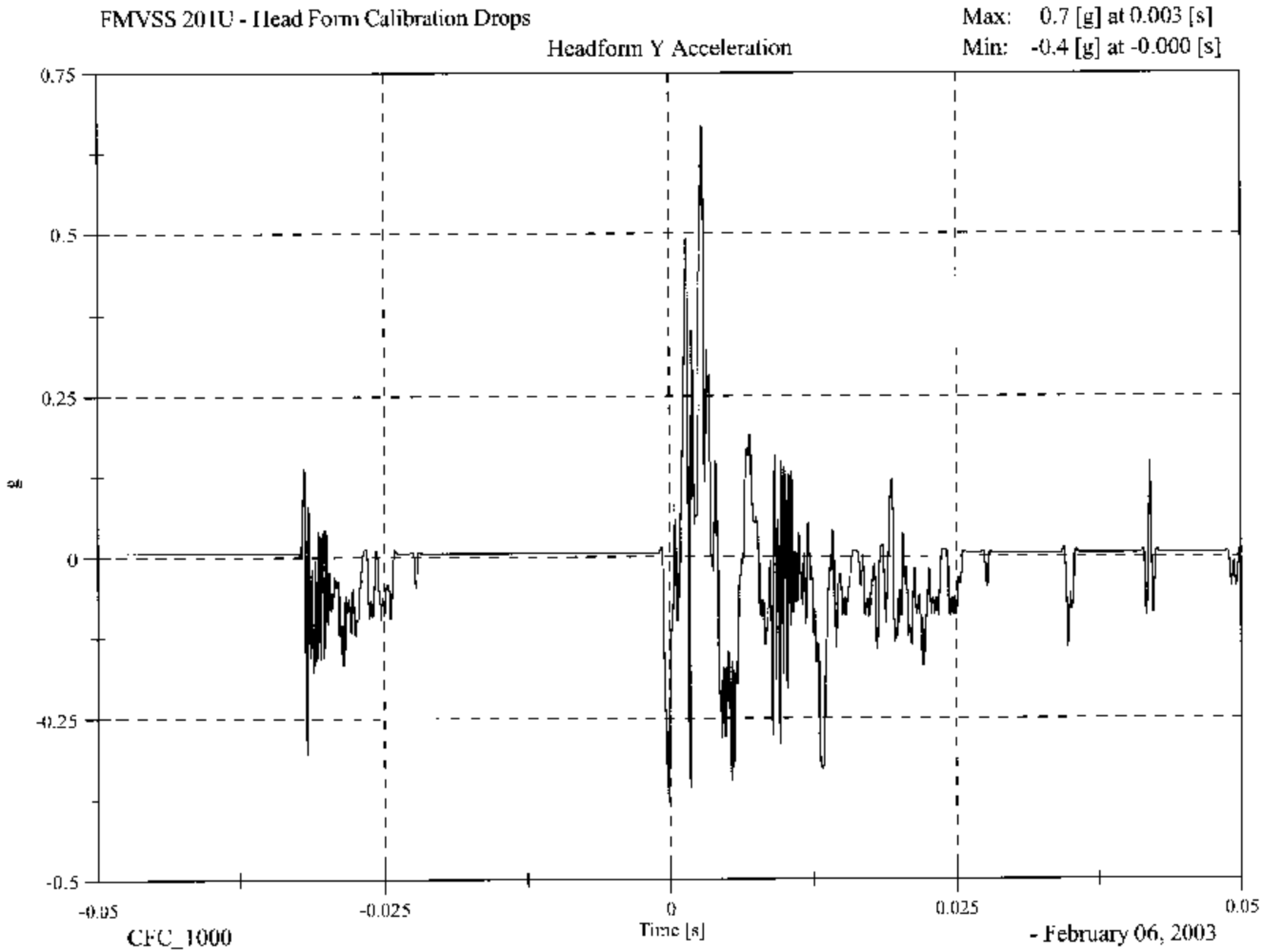
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000L	J28671	9/02	3/03
2 - LATERAL	ENDEVCO	7264-2000T	J32779	9/02	3/03
3 - VERTICAL	ENDEVCO	7264-2000T	J25854	9/02	3/03

REMARKS:

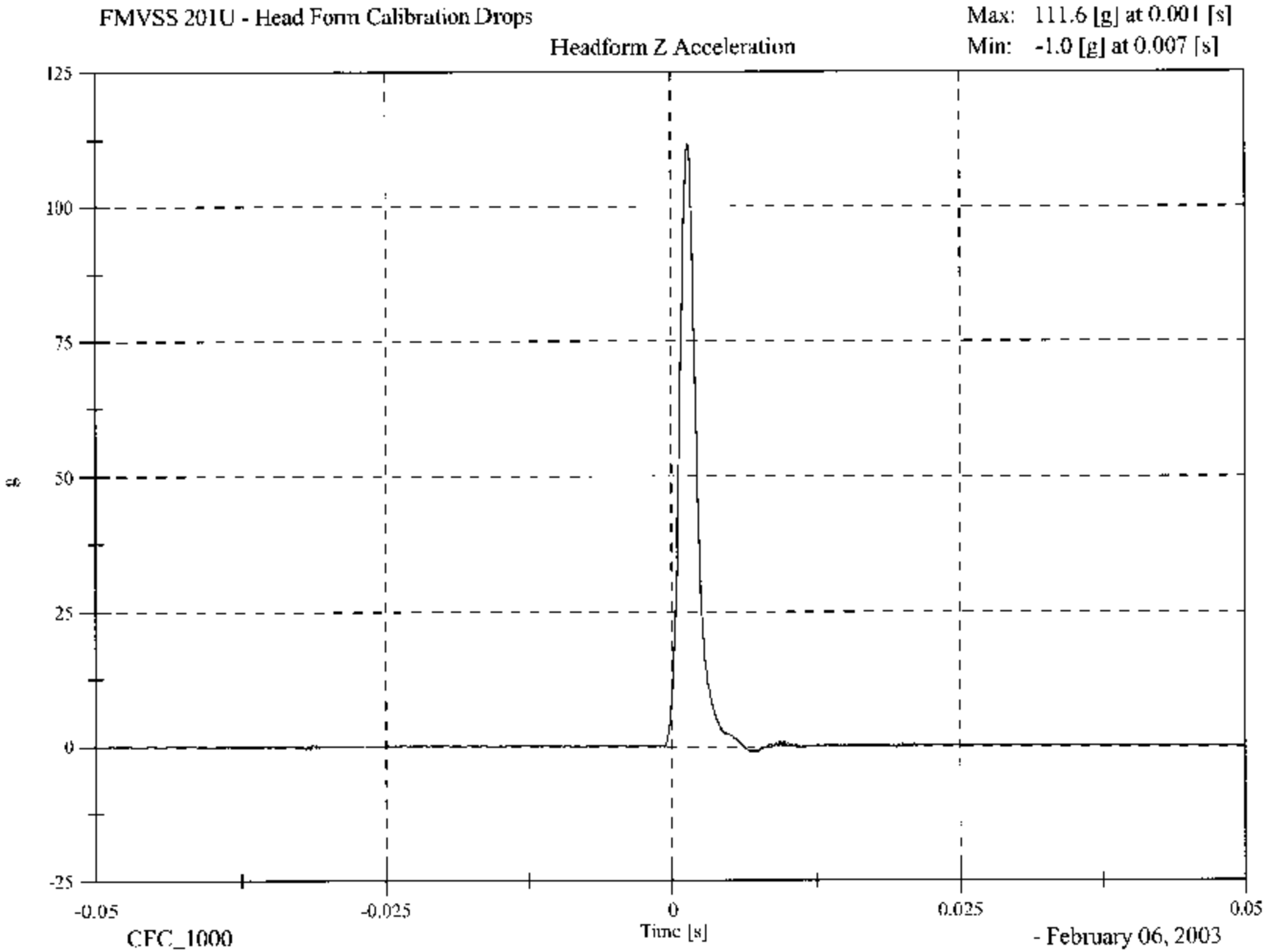


C30303 PRE-TEST HEADFORM 0355 IMPACT PLOT #1

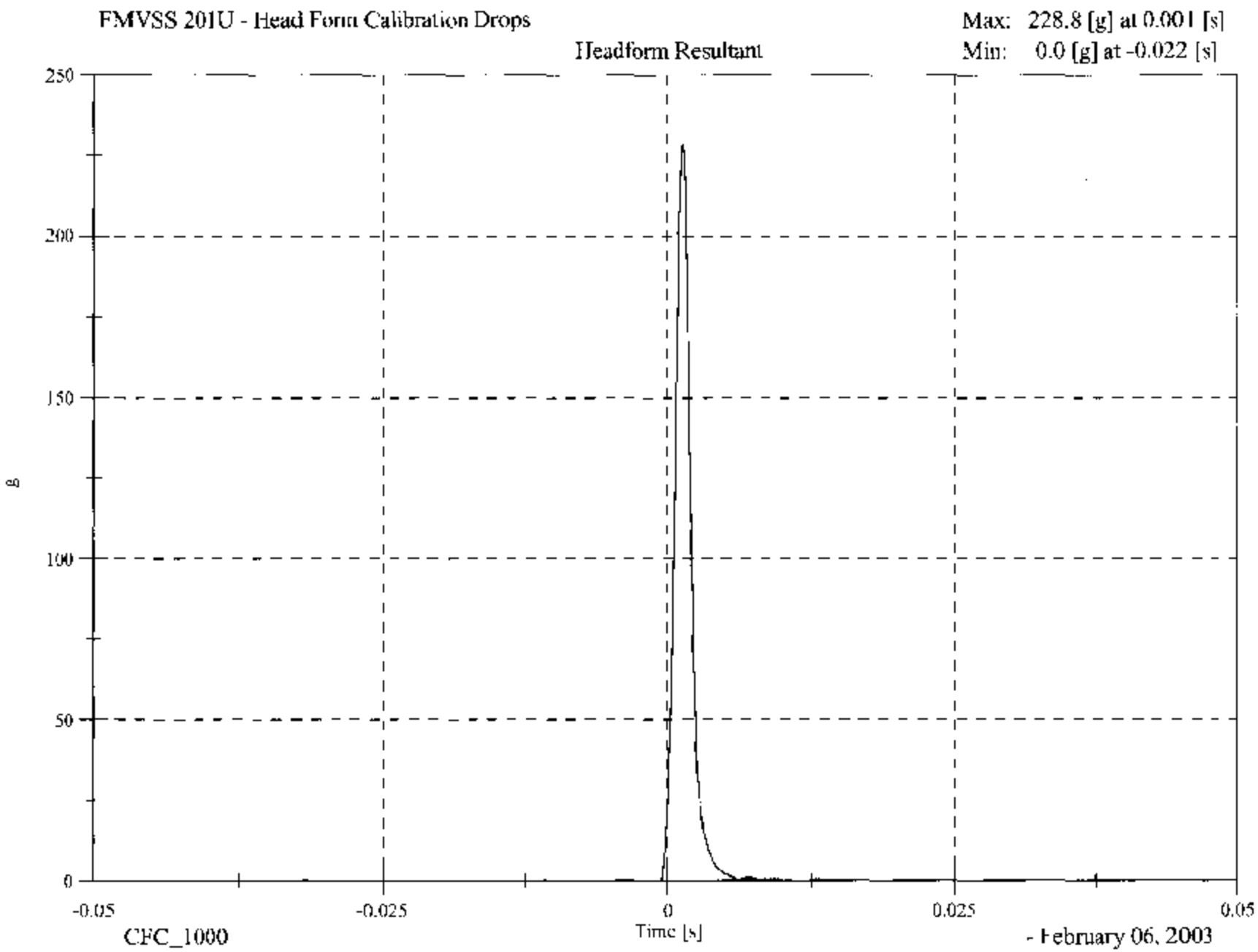
C30303 PRE-TEST HEADFORM 0355 IMPACT PLOT #2



C30303 PRE-TEST HEADFORM 0355 IMPACT PLOT #3



C30303 PRE-TEST HEADFORM 0355 IMPACT PLOT #4



PART 572L
HEAD DROP PRE-TEST

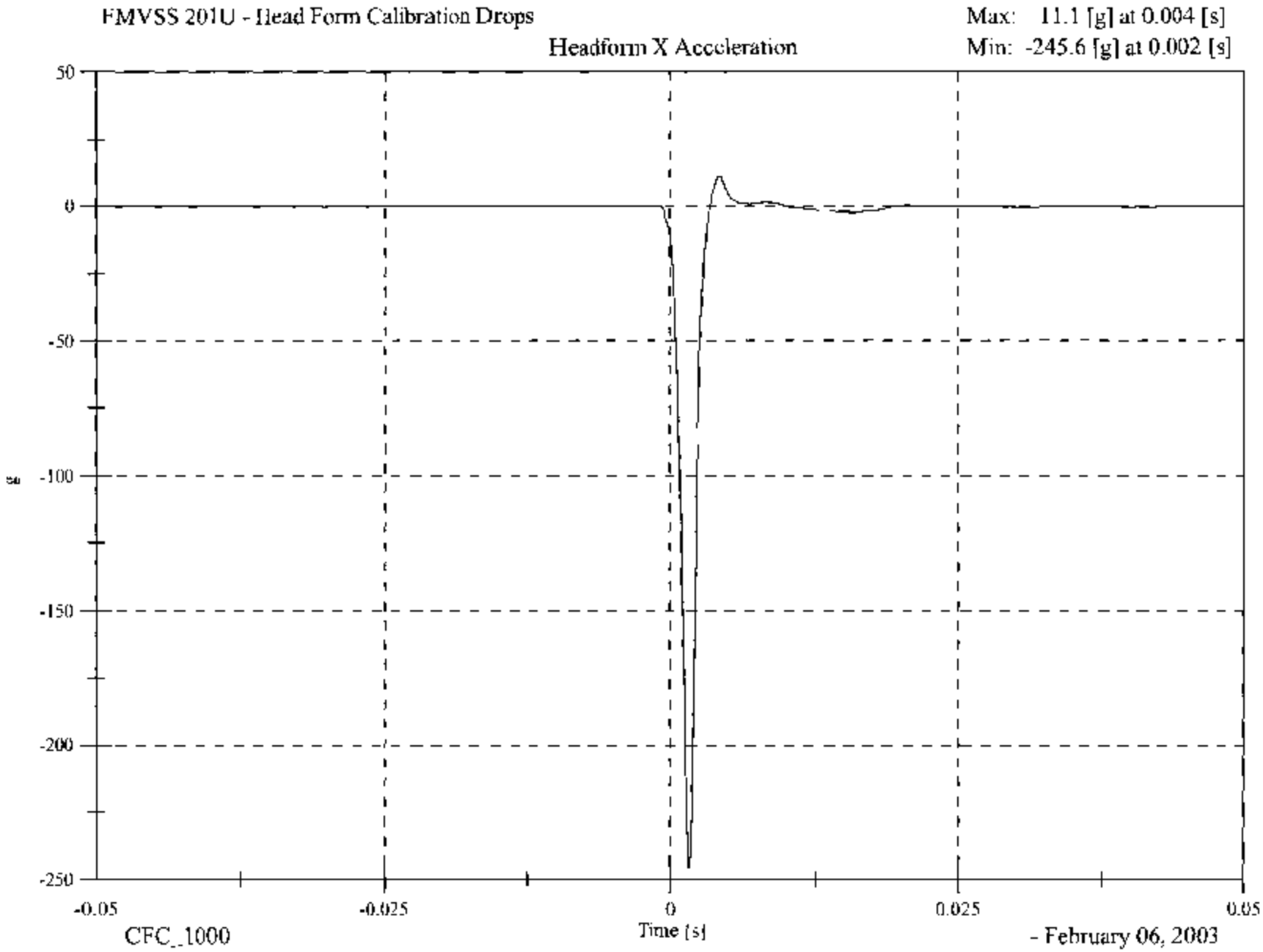
MANUFACTURER:	APPLIED SAFETY TECHNOLOGIES CORPORATION	
SERIAL NUMBER:	1255	
CALIBRATION DATE:	February 6, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	23
RELATIVE HUMIDITY	10% to 70%	13
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	270.1
PEAK LATERAL ACCELERATION	.5 Gs Maximum	3.6
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

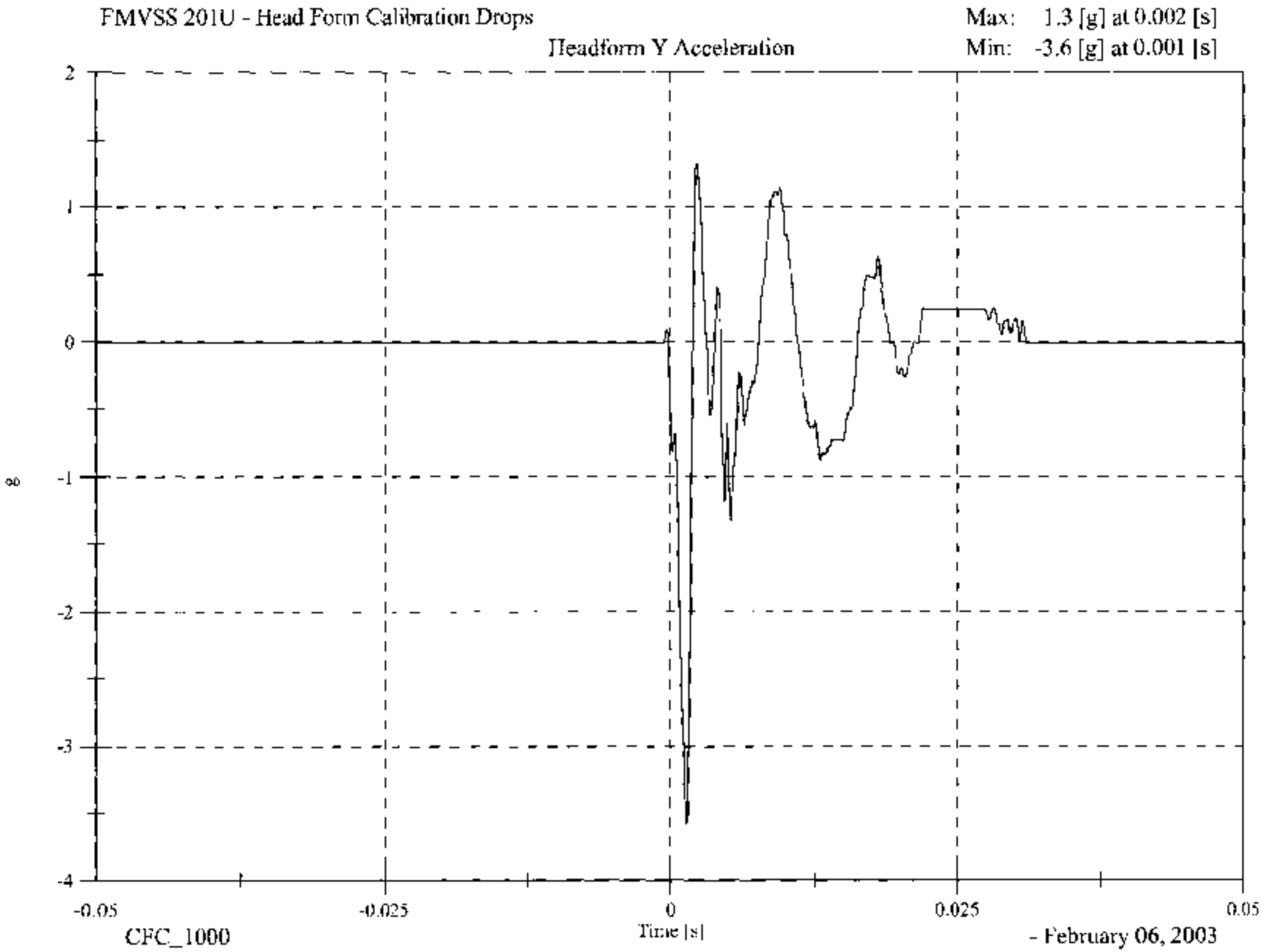
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J41006	9/02	3/03
2 - LATERAL	ENDEVCO	7264-2000T	J40994	9/02	3/03
3 - VERTICAL	ENDEVCO	7264-2000T	J41007	9/02	3/03

REMARKS:

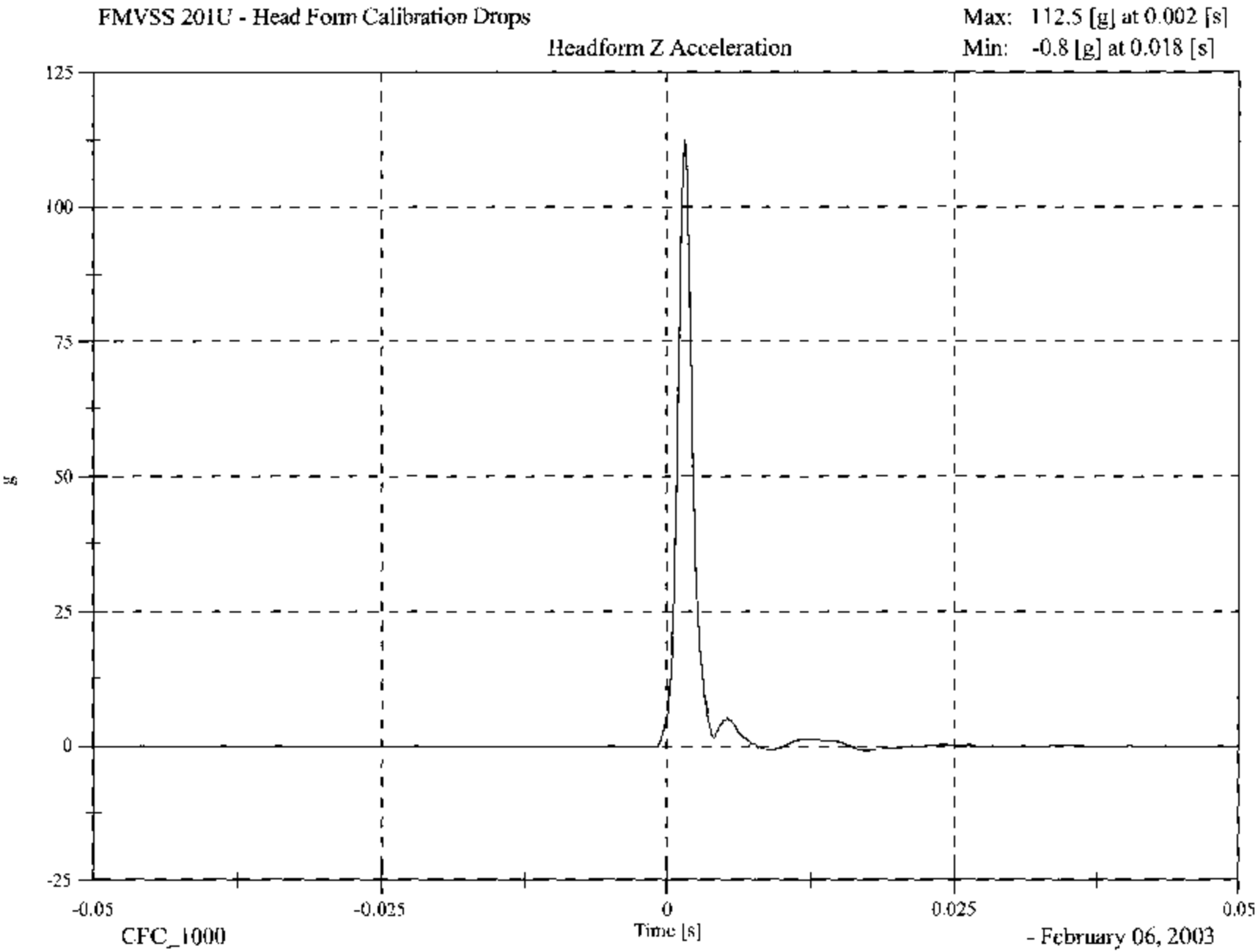
C30303 PRE-TEST HEADFORM 1255 IMPACT PLOT #1



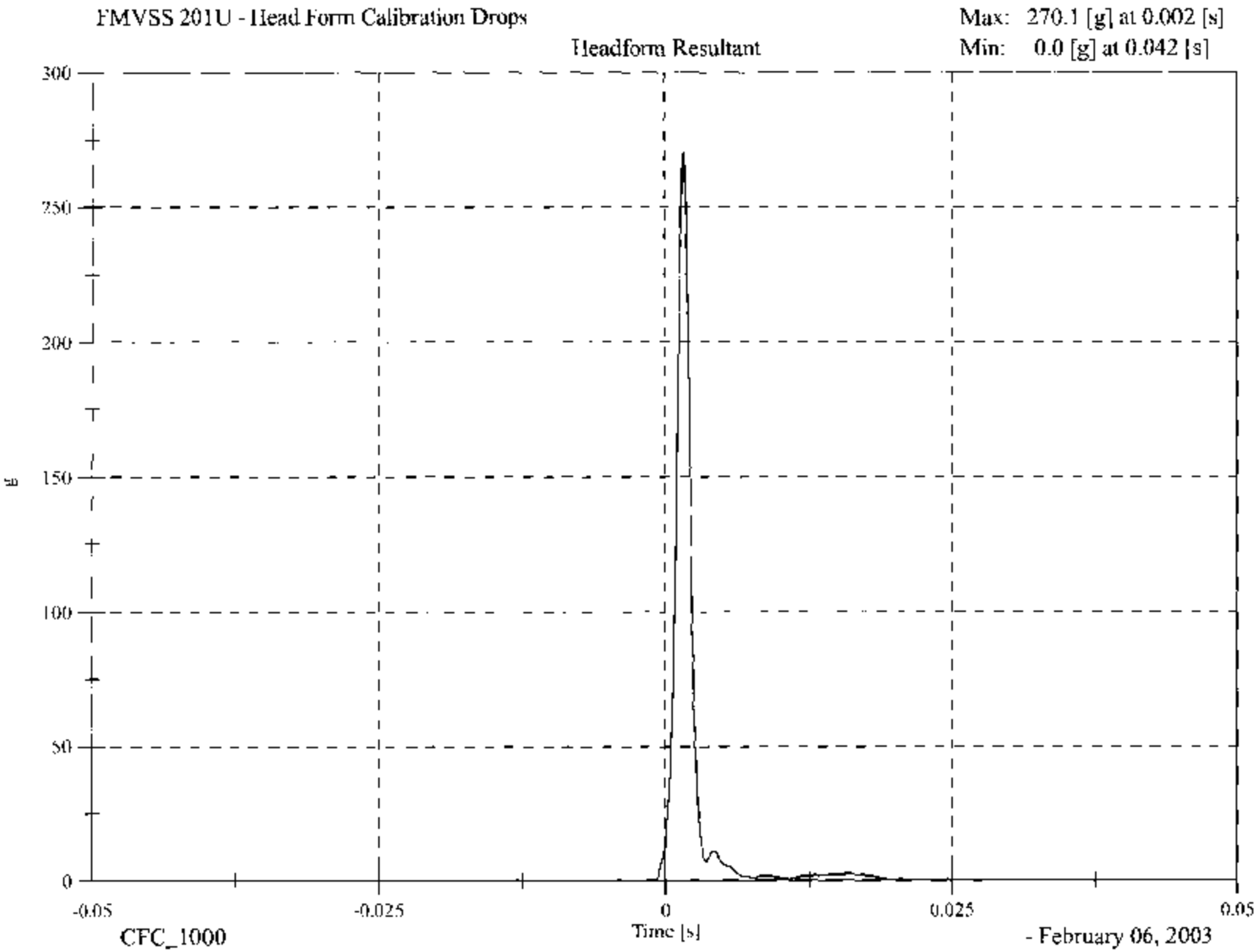
C30303 PRE-TEST HEADFORM 1255 IMPACT PLOT #2



C30303 PRE-TEST HEADFORM 1255 IMPACT PLOT #3



C30303 PRE-TEST HEADFORM 1255 IMPACT PLOT #4



PART 572L
HEAD DROP POST TEST

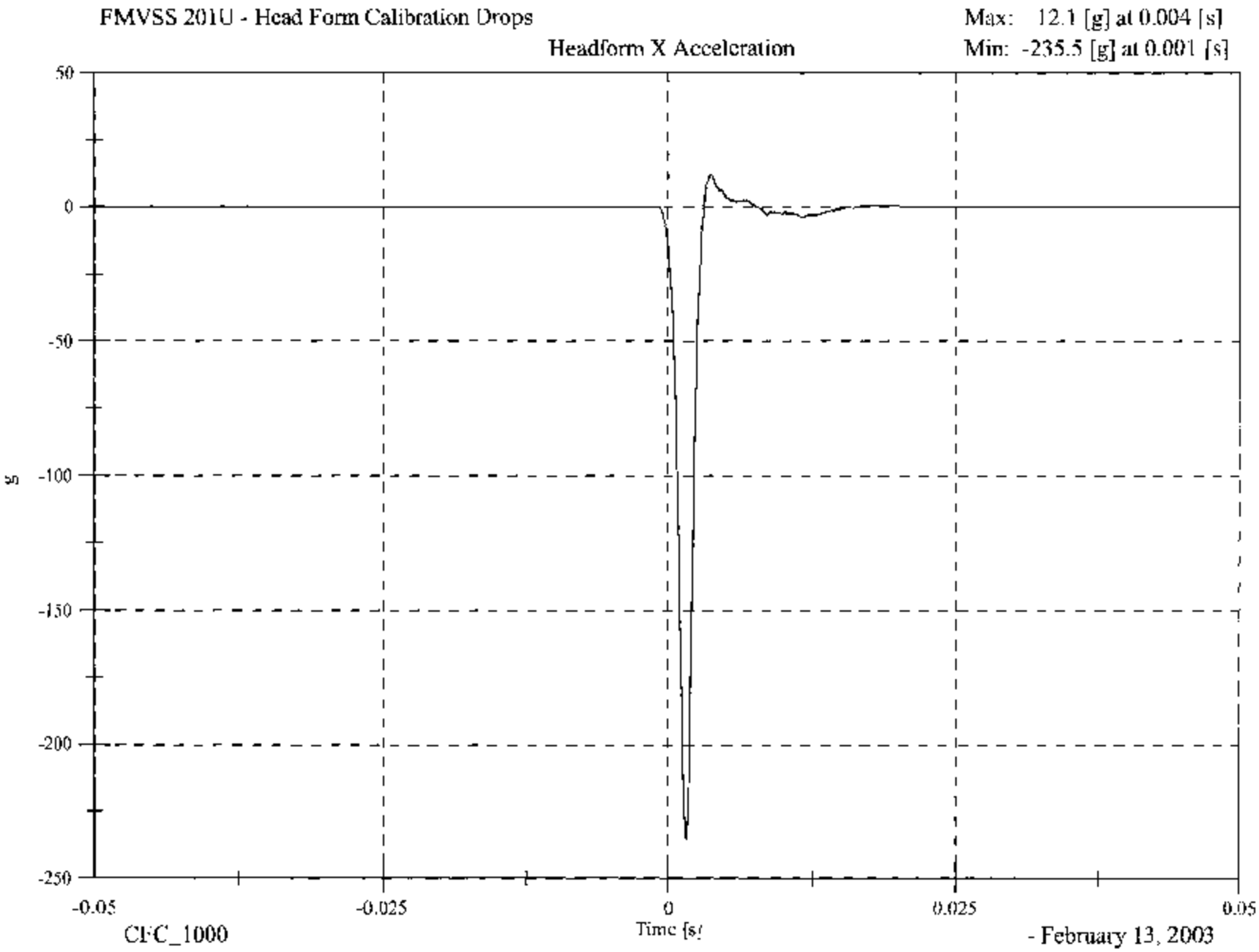
MANUFACTURER:	FIRST TECHNOLOGIES SAFETY SYSTEMS	
SERIAL NUMBER:	0642	
CALIBRATION DATE:	February 13, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	22
RELATIVE HUMIDITY	10% to 70%	12
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	261.5
PEAK LATERAL ACCELERATION	15 Gs Maximum	2.9
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

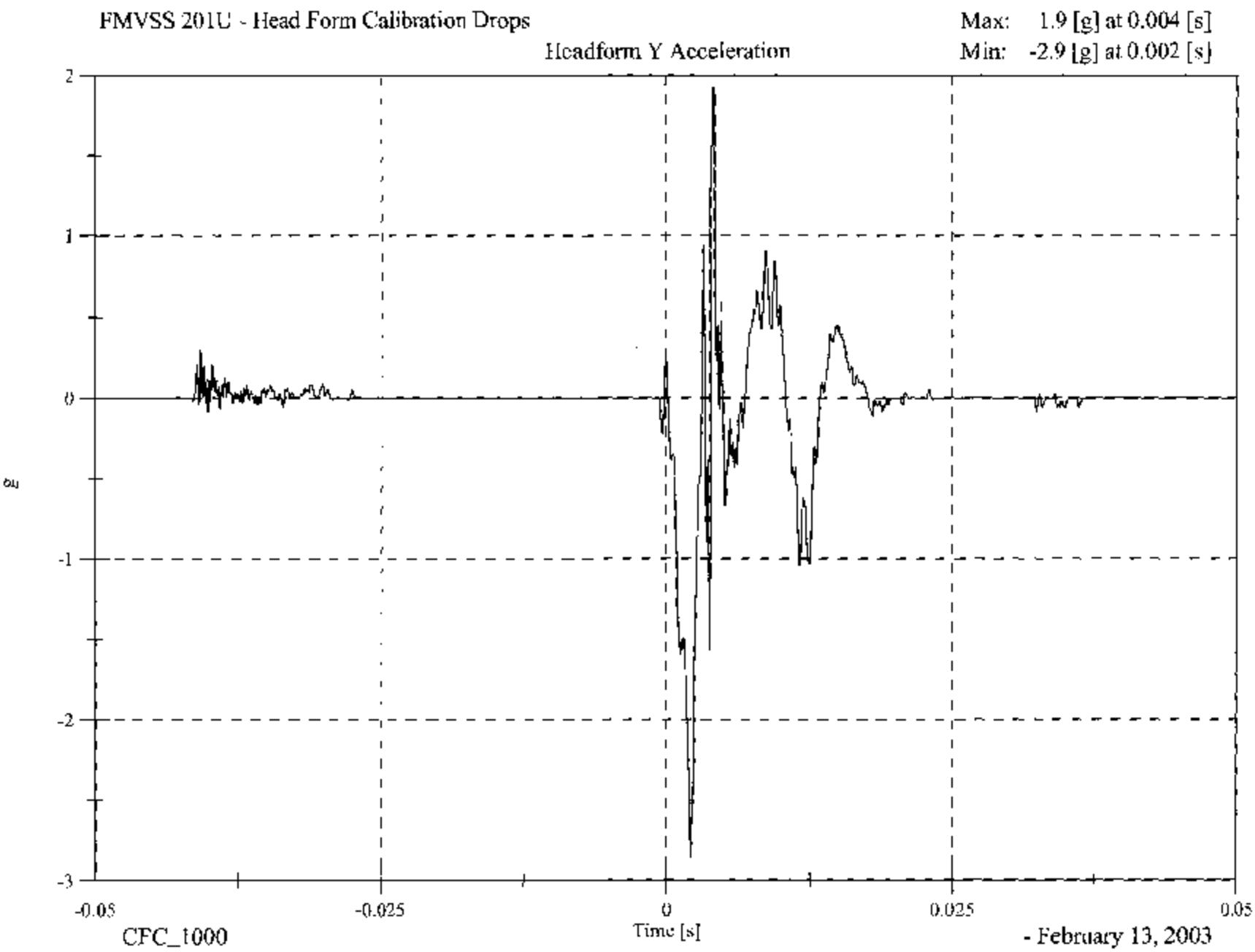
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J24876	9/02	3/03
2 - LATERAL	ENDEVCO	7264-2000T	J33030	9/02	3/03
3 - VERTICAL	ENDEVCO	7264-2000T	J31009	9/02	3/03

REMARKS

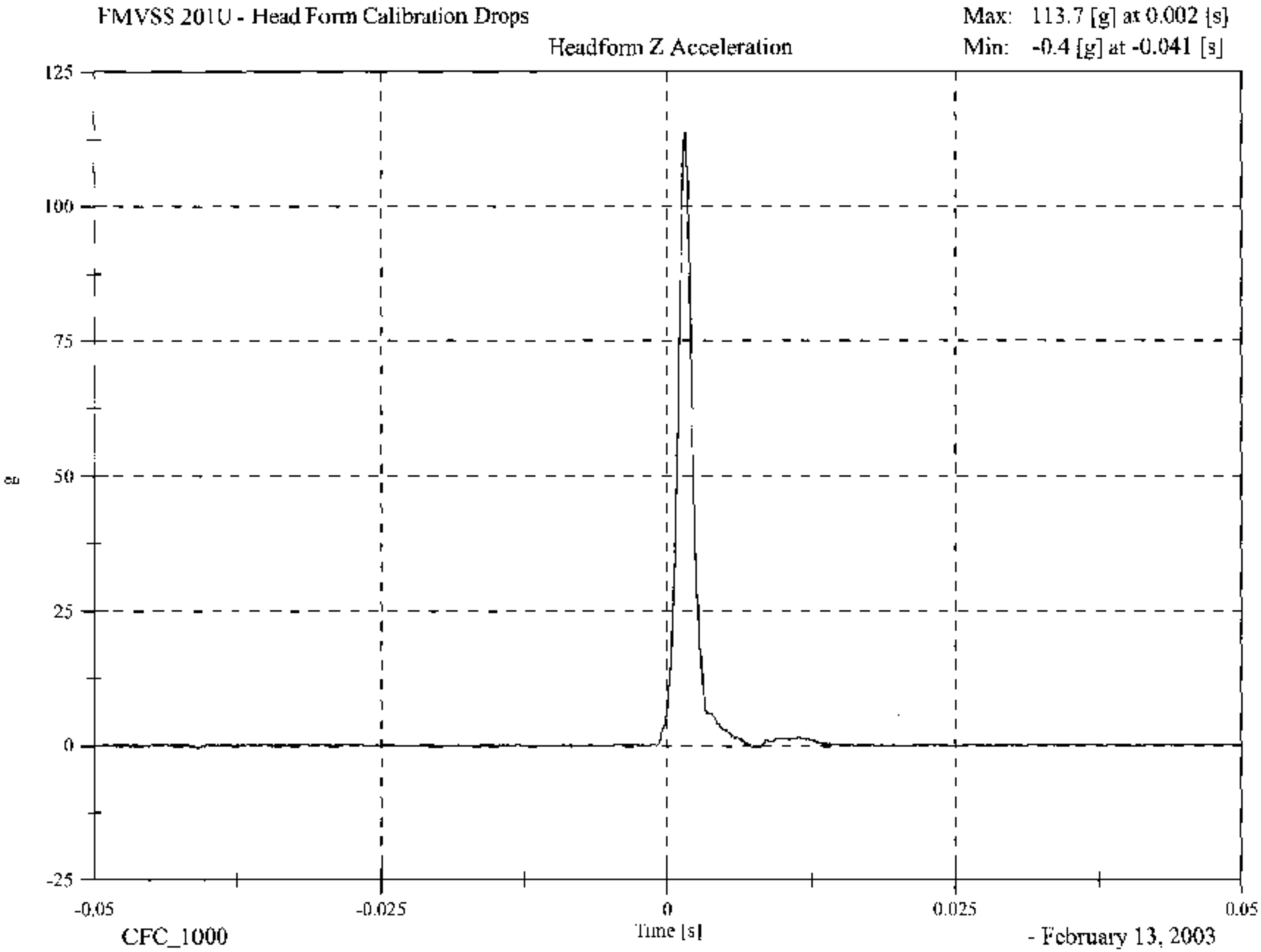
C30303 POST-TEST HEADFORM 0642 IMPACT PLOT #1

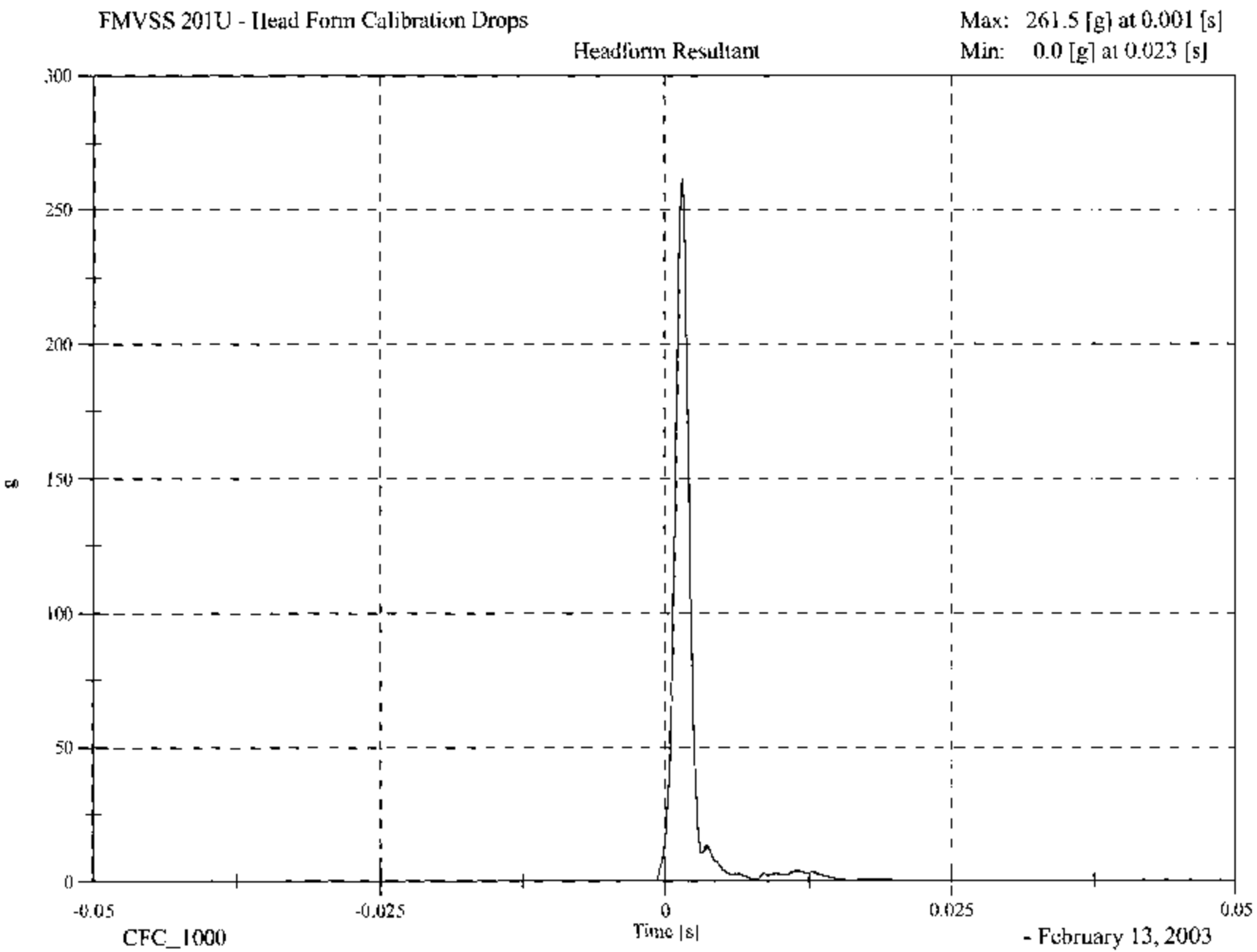


C30303 POST-TEST HEADFORM 0642 IMPACT PLOT #2



C30303 POST-TEST HEADFORM 0642 IMPACT PLOT #3




FMVSS 201U - Head Form Calibration Drops
Headform Resultant
Max: 261.5 [g] at 0.001 [s]
Min: 0.0 [g] at 0.023 [s]
300
250
200
150
100
50
0
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
- February 13, 2003
C30303 POST-TEST HEADFORM 0642 IMPACT PLOT #4

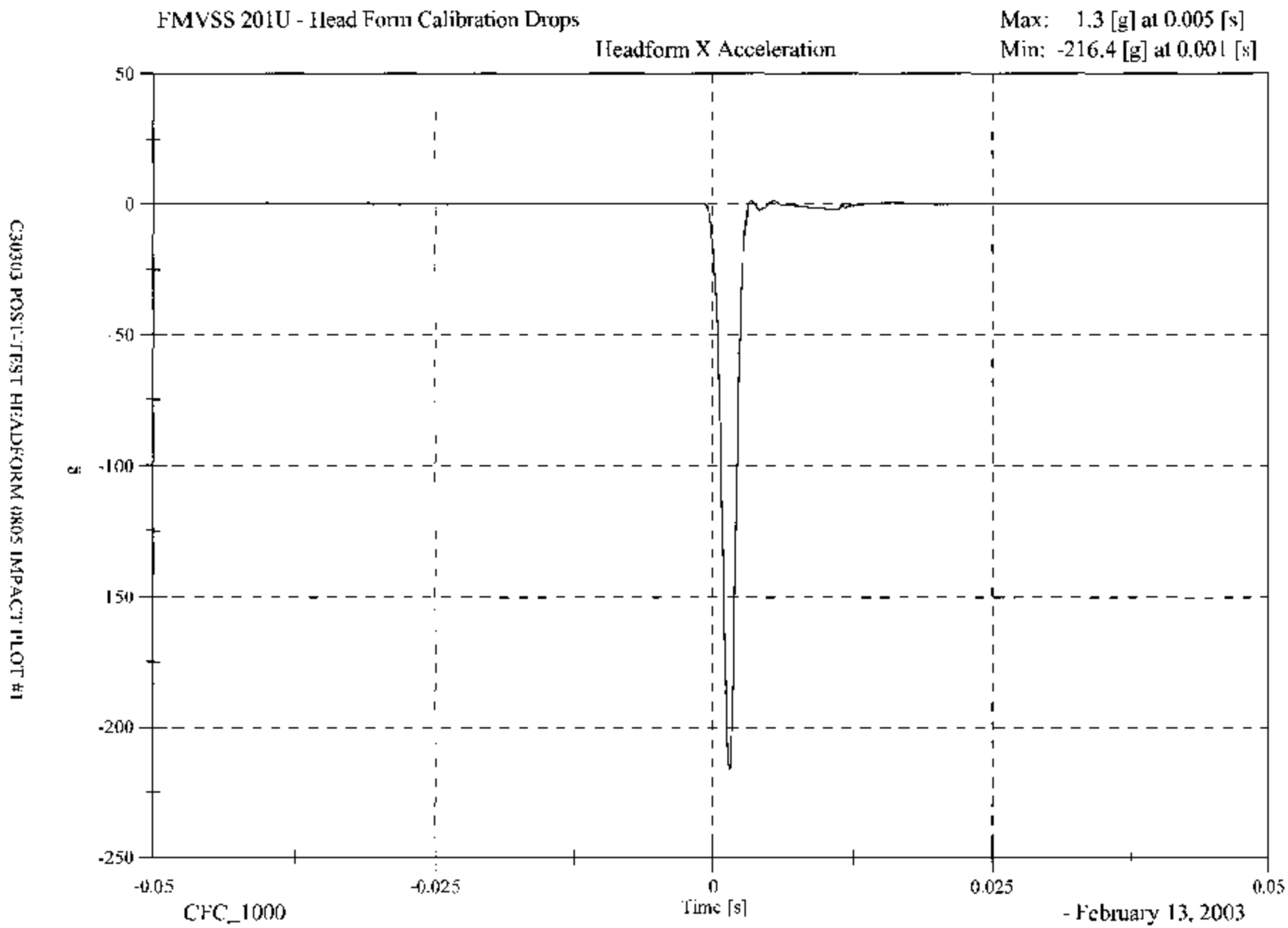
PART 572L
HEAD DROP POST-TEST

MANUFACTURER:	FIRST TECHNOLOGIES SAFETY SYSTEMS	
SERIAL NUMBER:	805	
CALIBRATION DATE:	February 13, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	22
RELATIVE HUMIDITY	10% to 70%	12
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	240.7
PEAK LATERAL ACCELERATION	15 Gs Maximum	2.1
IS ACCELERATION CURVE UNIMODAL?	YES	YES

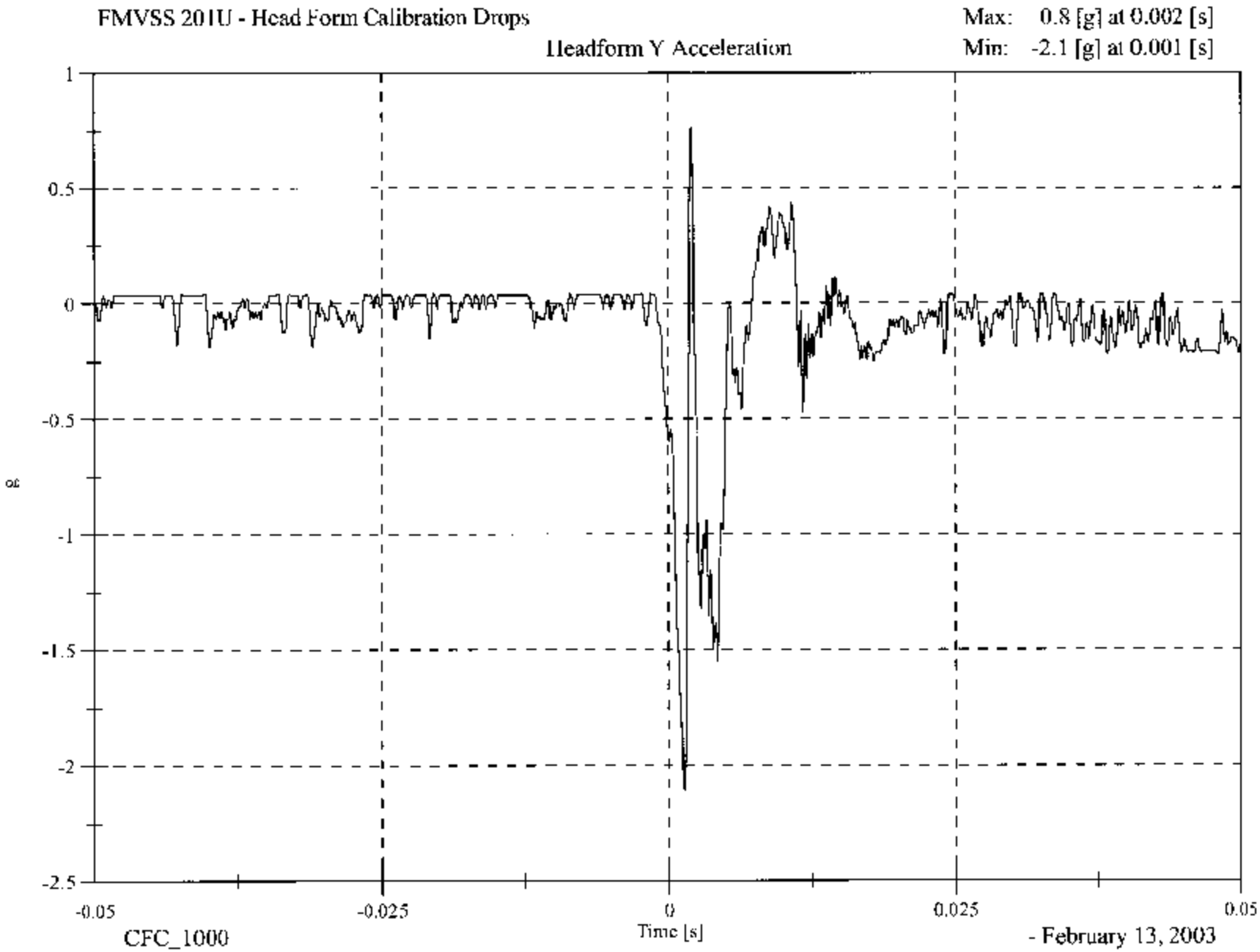
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J38127	9/02	3/03
2 - LATERAL	ENDEVCO	7264-2000T	J37986	9/02	3/03
3 - VERTICAL	ENDEVCO	7264-2000T	J37854	9/02	3/03

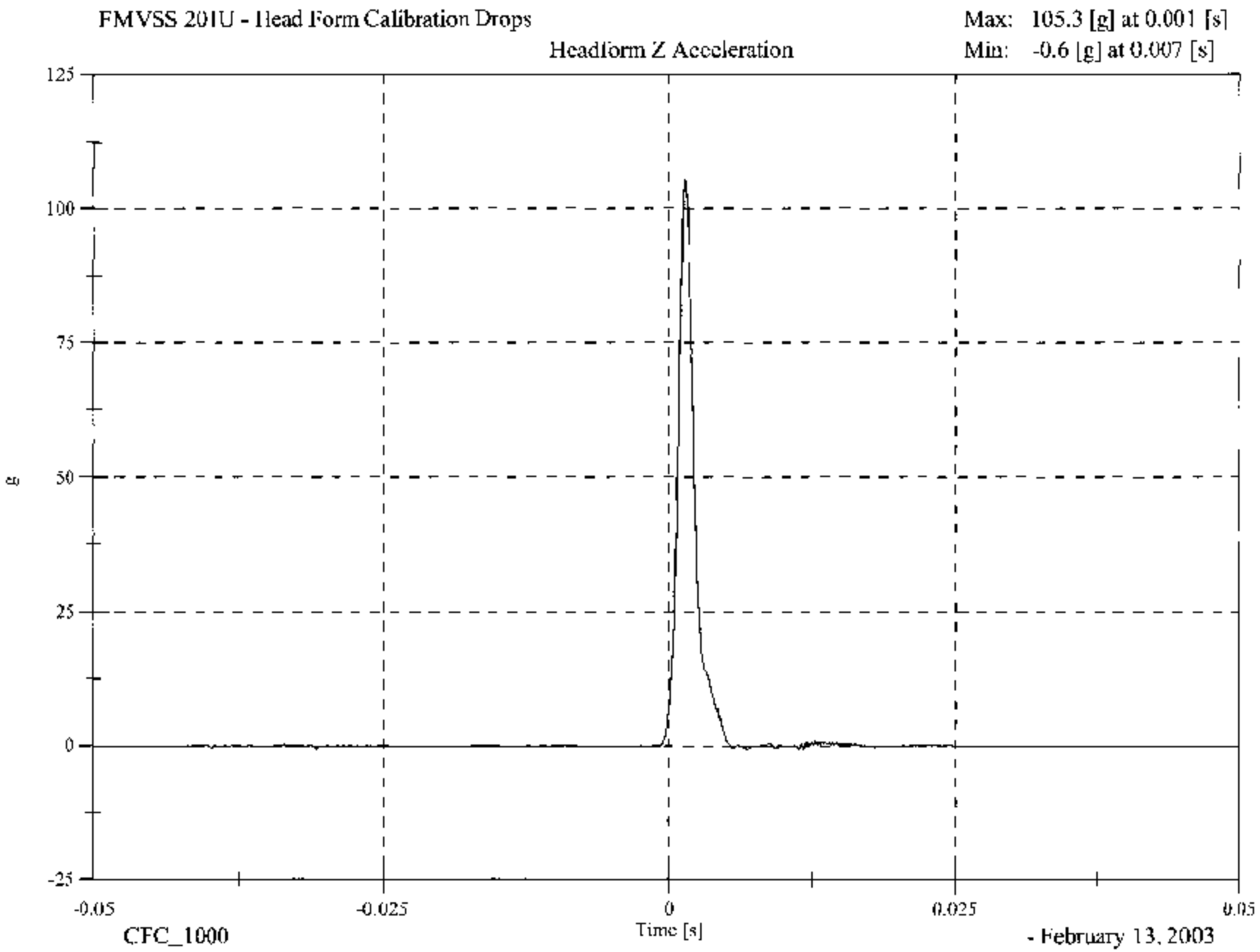
REMARKS:


FMVSS 201U - Head Form Calibration Drops
Headform X Acceleration
Max: 1.3 [g] at 0.005 [s]
Min: -216.4 [g] at 0.001 [s]
50
0
-50
-100
-150
-200
-250
g
-0.05
-0.025
0
0.025
0.05
Time [s]
CFC_1000
- February 13, 2003
C30303 POST-TEST HEADFORM 0805 IMPACT PLOT #1

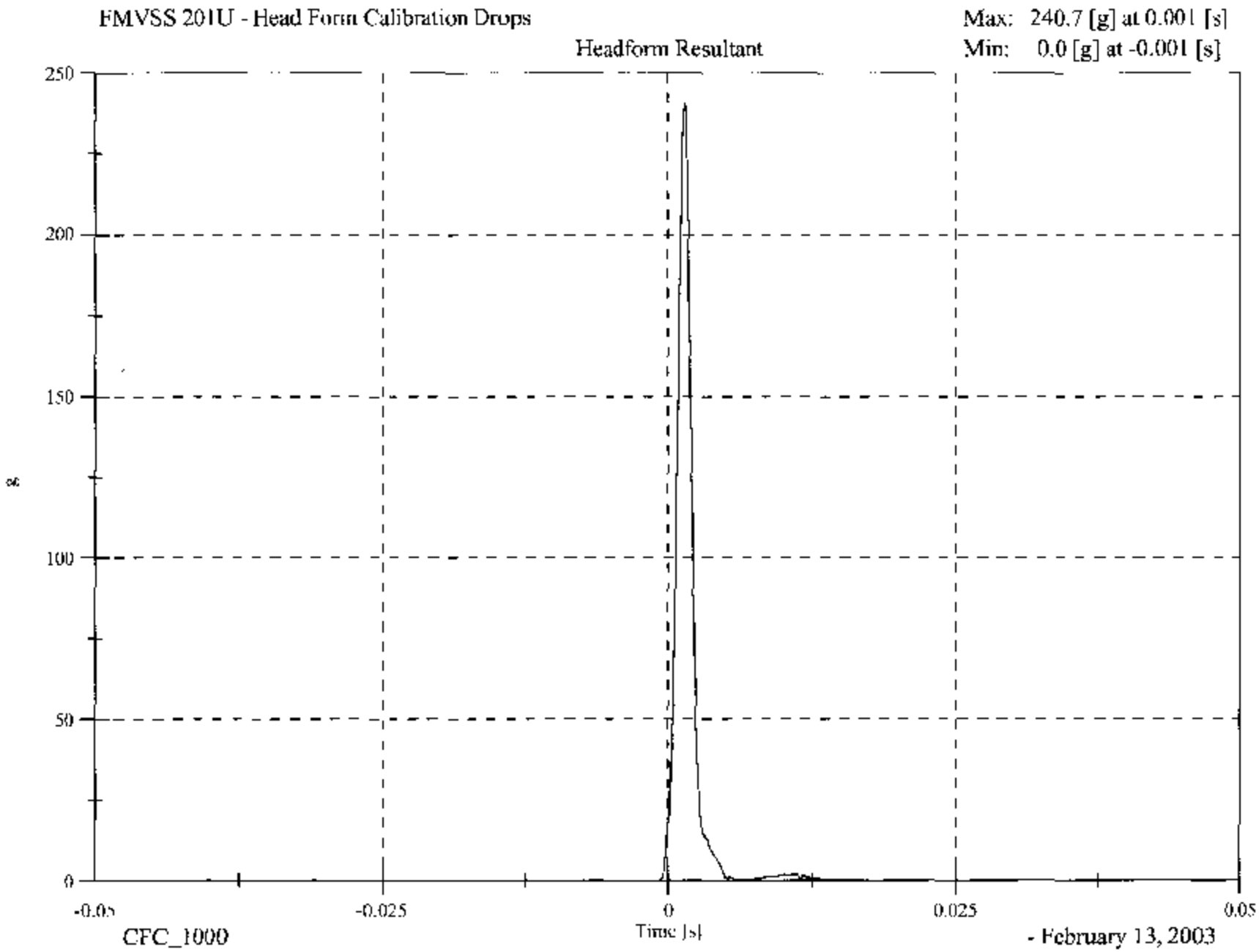
C30503 POST-TEST HEADFORM 0805 IMPACT PLOT #2



C30303 POST-TEST HEADFORM 0805 IMPACT PLOT #3



C30303 POST-TEST HEADFORM 0805 IMPACT PLOT #4



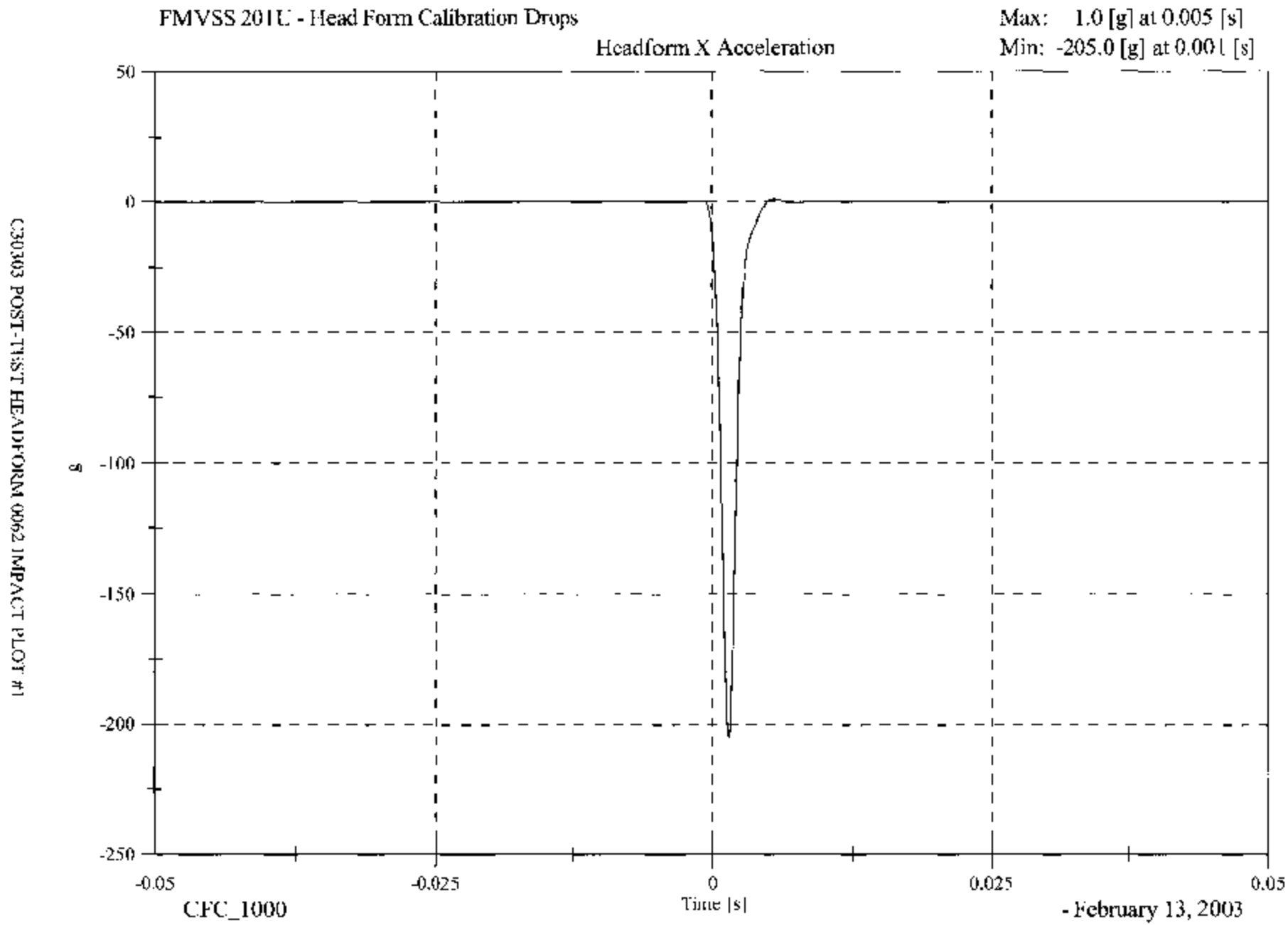
PART 572L
HEAD DROP POST-TEST

MANUFACTURER:	APPLIED SAFETY TECHNOLOGIES CORPORATION	
SERIAL NUMBER:	0062	
CALIBRATION DATE:	February 13, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	22
RELATIVE HUMIDITY	10% to 70%	12
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	232.5
PEAK LATERAL ACCELERATION	15 Gs Maximum	4
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

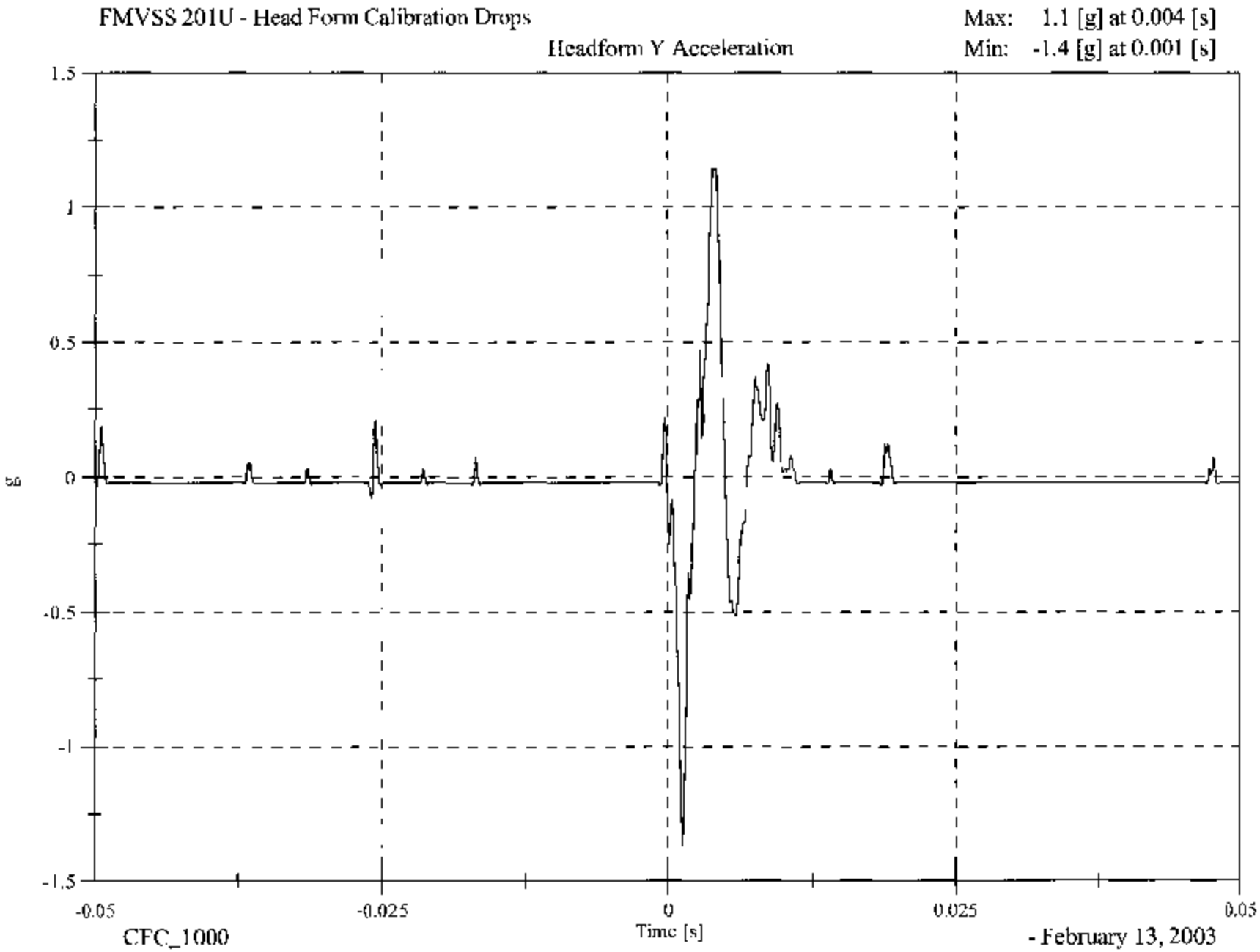
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J03127	9/02	3/03
2 - LATERAL	ENDEVCO	7264-2000T	J03619	9/02	3/03
3 - VERTICAL	ENDEVCO	7264-2000T	J02762	9/02	3/03

REMARKS:



C30303 POST-TEST HEADFORM 0062 IMPACT PLOT #1

C30303 POST-TEST HEADFORM 0062 IMPACT PLOT #2

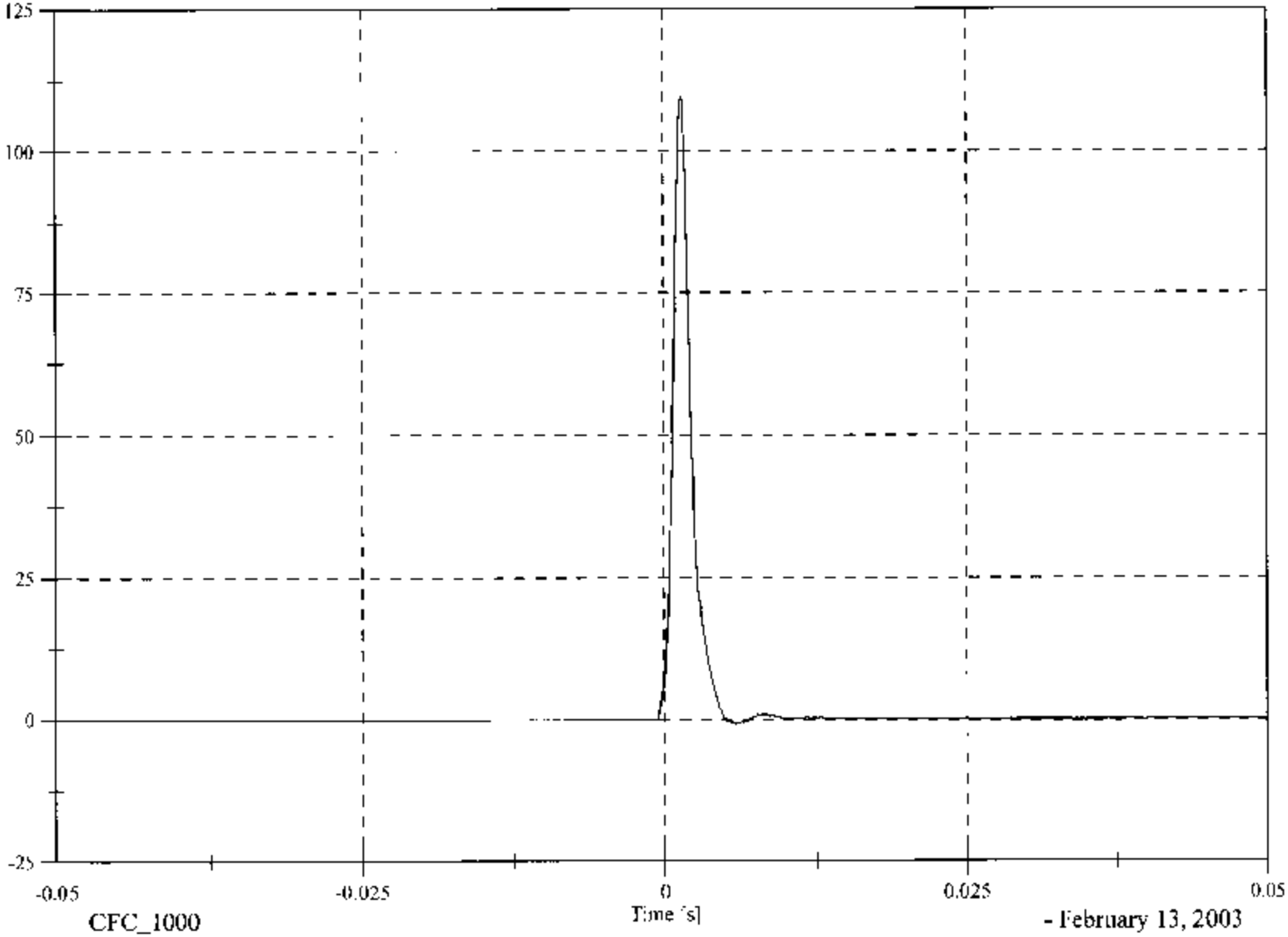


C30303 POST-TEST, HEADFORM 0062 IMPACT PLOT #3

FMVSS 201U - Head Form Calibration Drops

Headform Z Acceleration

Max: 109.7 [g] at 0.001 [s]
Min: -0.8 [g] at 0.006 [s]



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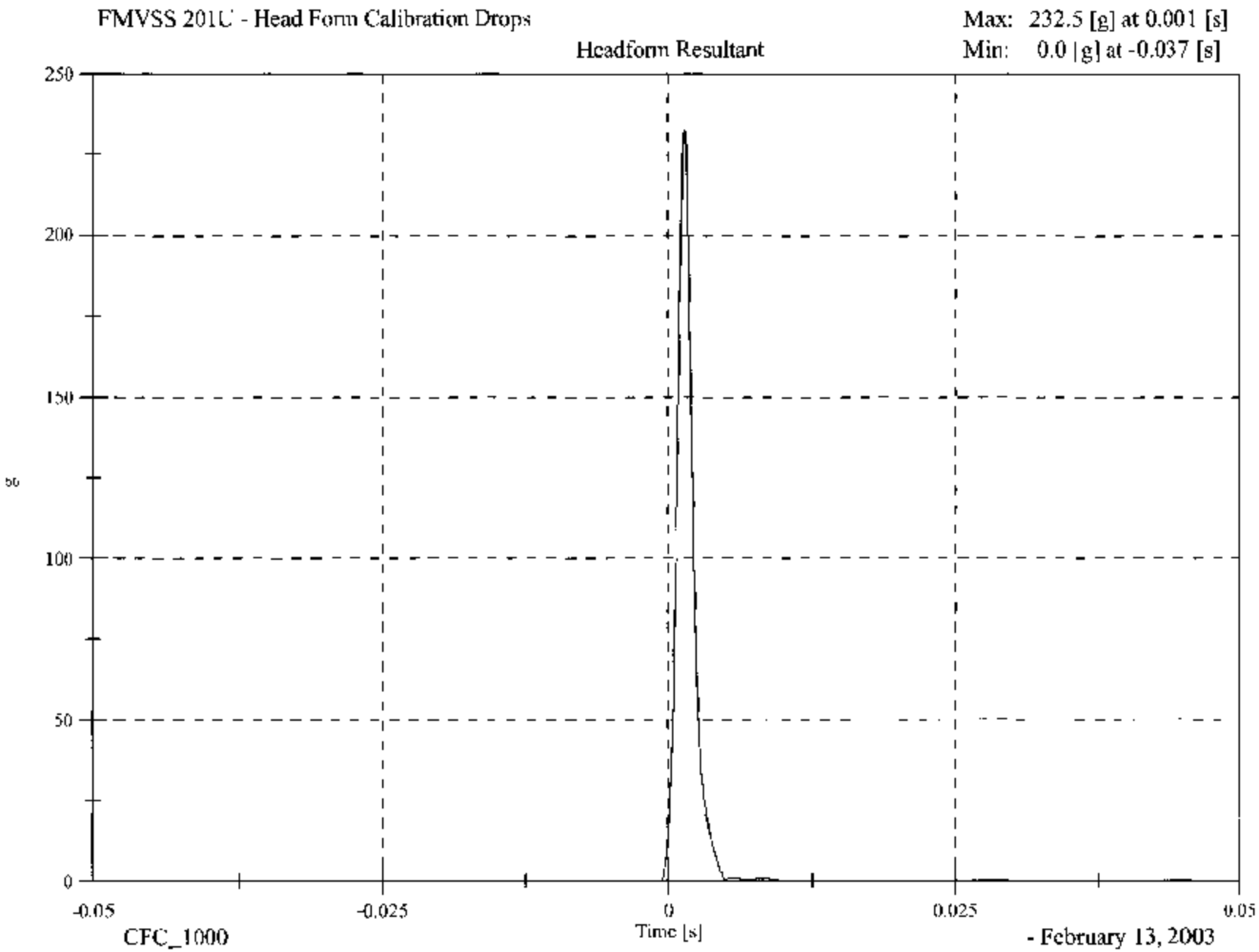
- February 13, 2003

C30303 POST-TEST HEADFORM 0062 IMPACT PLOT #4



PART 572L
HEAD DROP POST-TEST

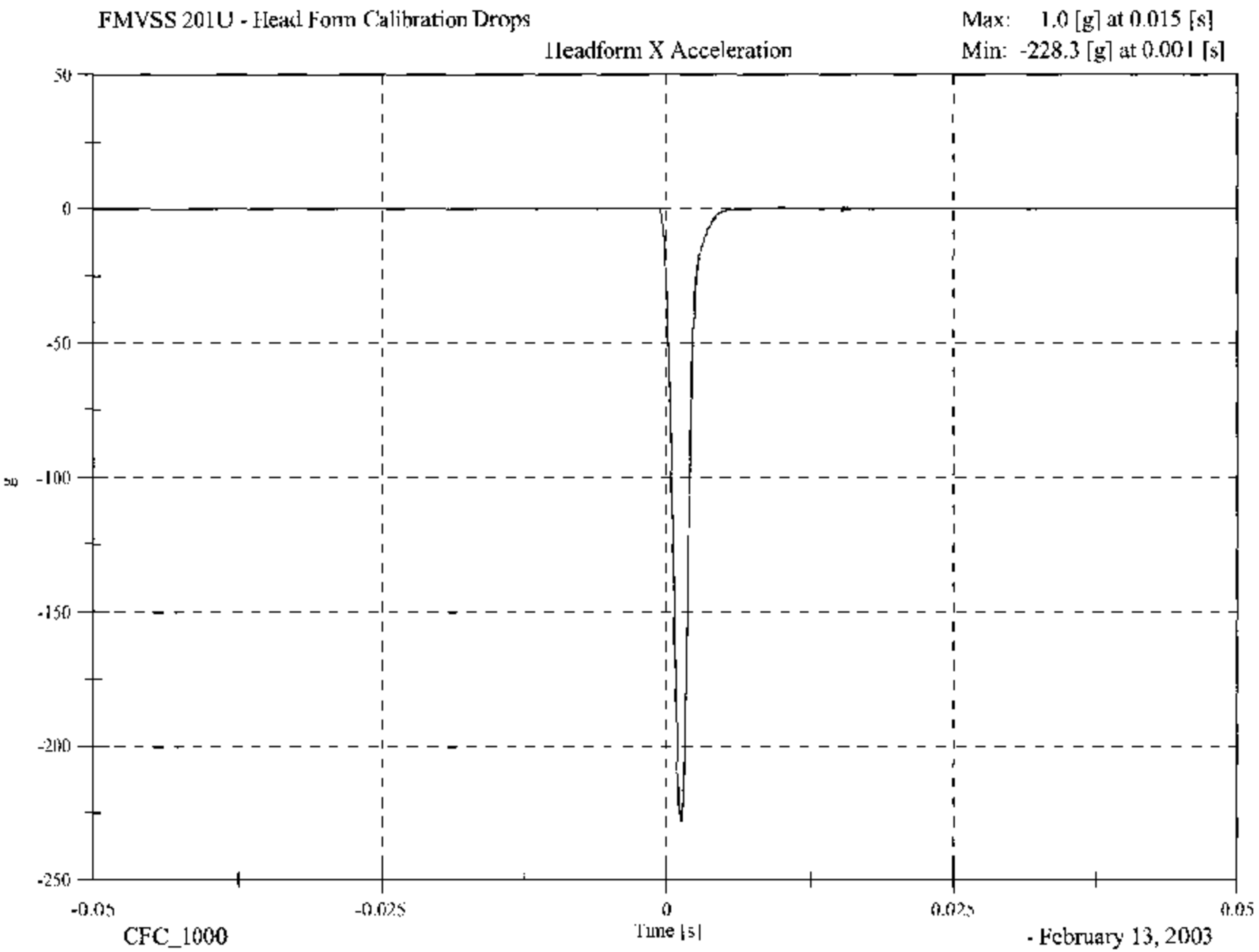
MANUFACTURER:	APPLIED SAFETY TECHNOLOGIES CORPORATION	
SERIAL NUMBER:	0355	
CALIBRATION DATE:	February 13, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	22
RELATIVE HUMIDITY	10% to 70%	12
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	251.5
PEAK LATERAL ACCELERATION	15 Gs Maximum	4.6
IS ACCELERATION CURVE UNIMODAL?	YES	YES

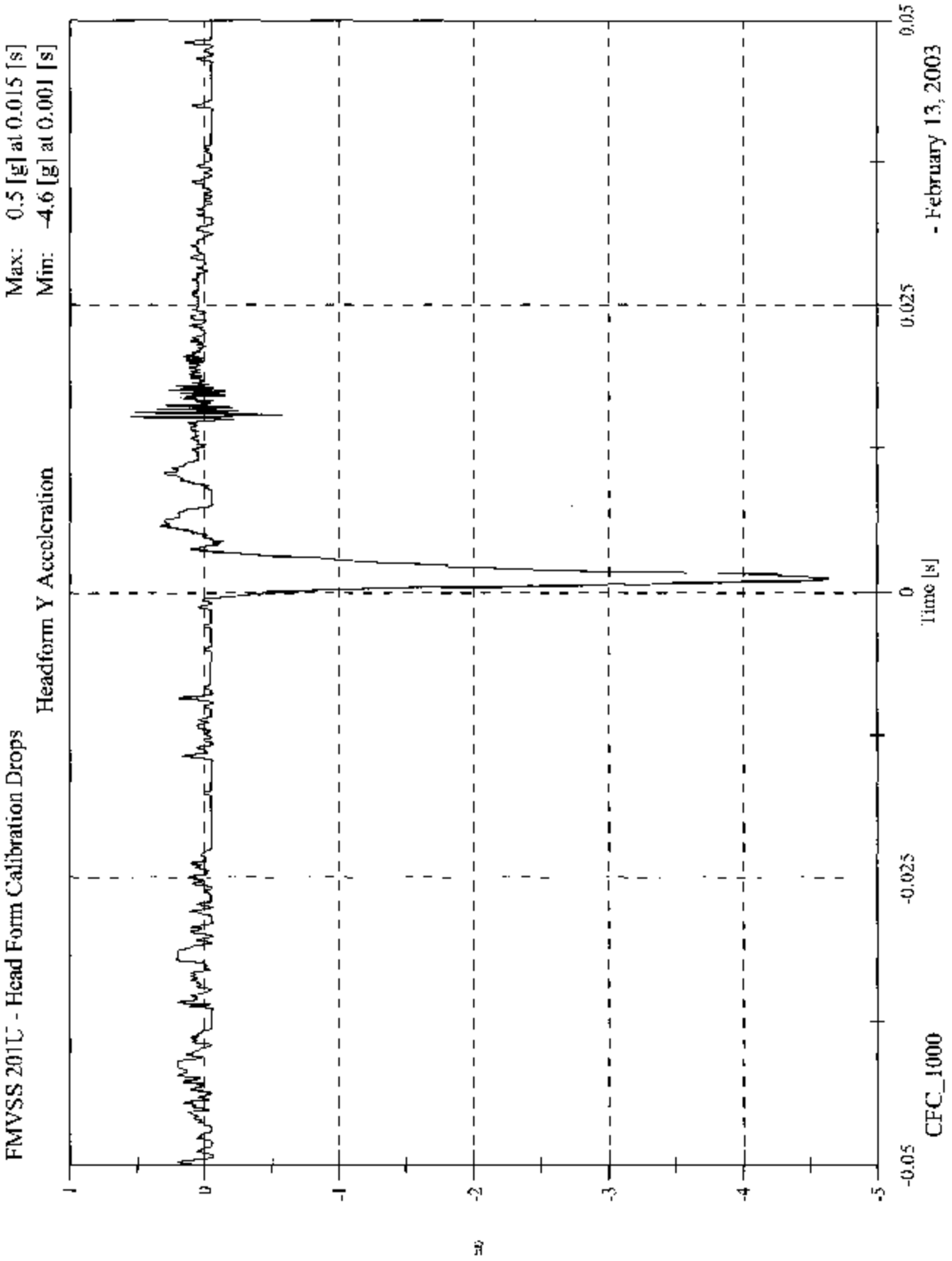
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 -LONGITUDINAL	ENDEVCO	7264-2000T	J28671	9/02	3/03
2 - LATERAL	ENDEVCO	7264-2000T	J32779	9/02	3/03
3 - VERTICAL	ENDEVCO	7264-2000T	J25854	9/02	3/03

REMARKS:

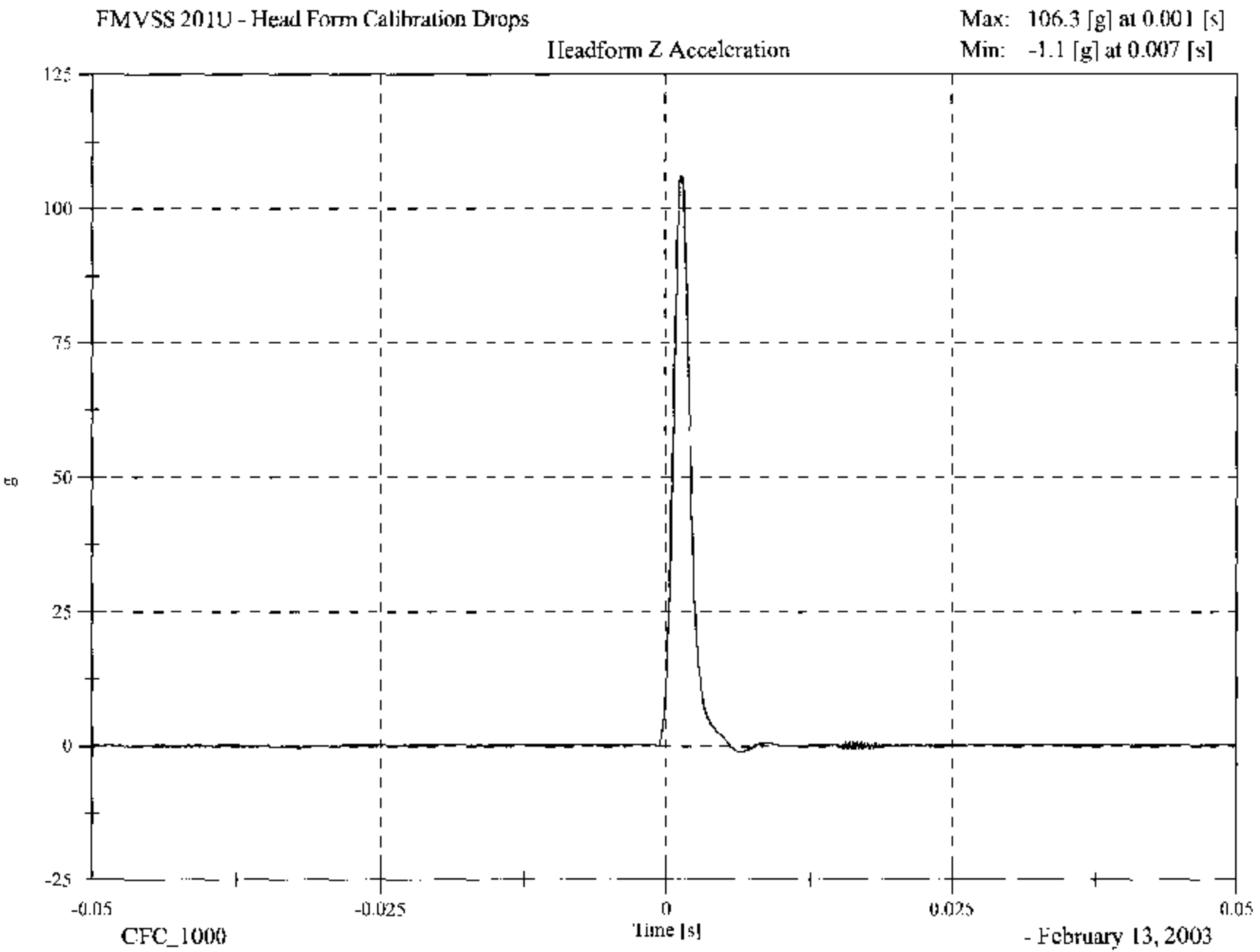
C30303 POST-TEST HEADFORM 0355 IMPACT PLOT #1



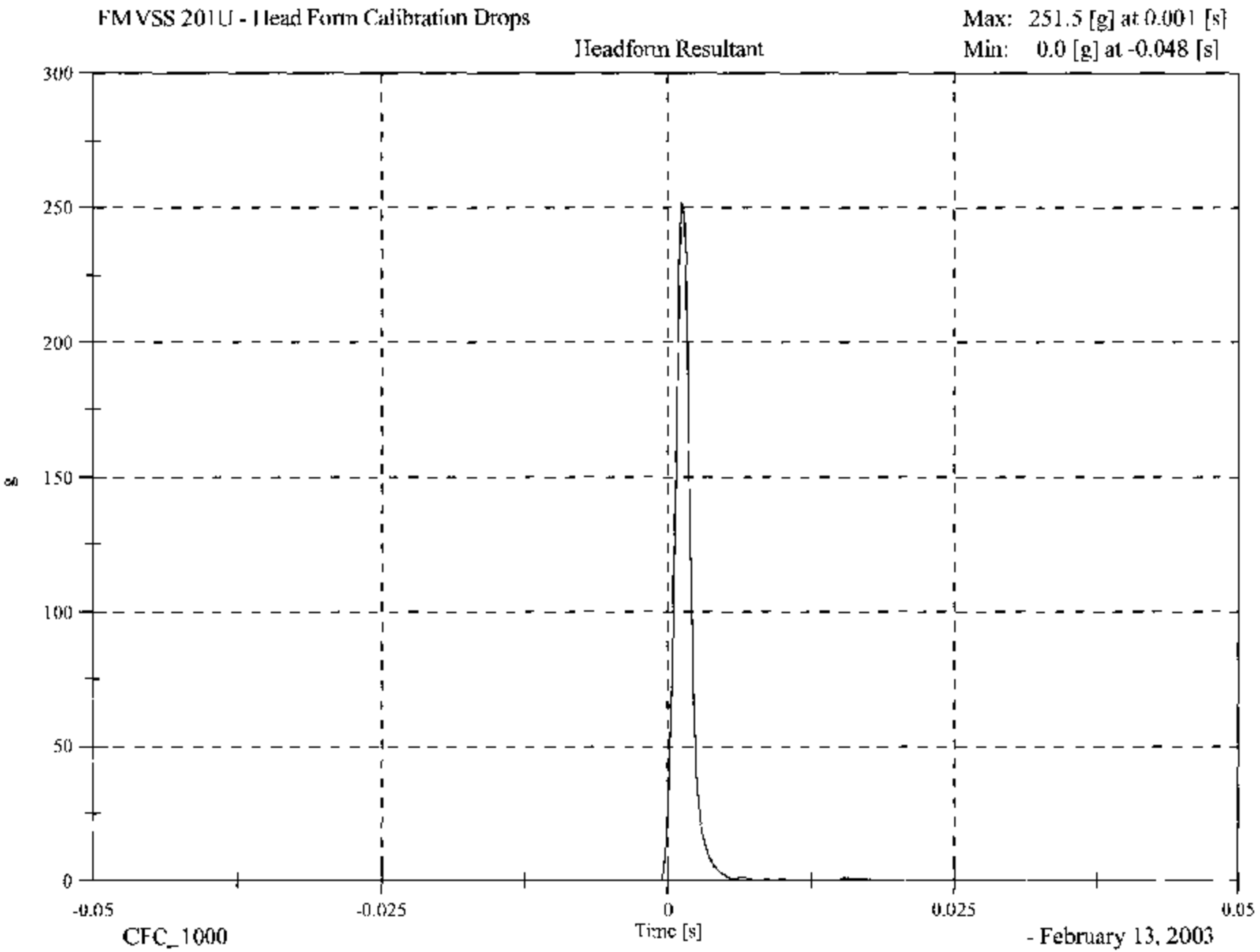


C30303 POST-TEST HEADFORM 0355 IMPACT PLOT #2

C30303 POST-TEST HEADFORM 0355 IMPACT PLOT #3



C30303 POST-TEST HEADFORM 0355 IMPACT PLOT #4



PART 572L
HEAD DROP POST-TEST

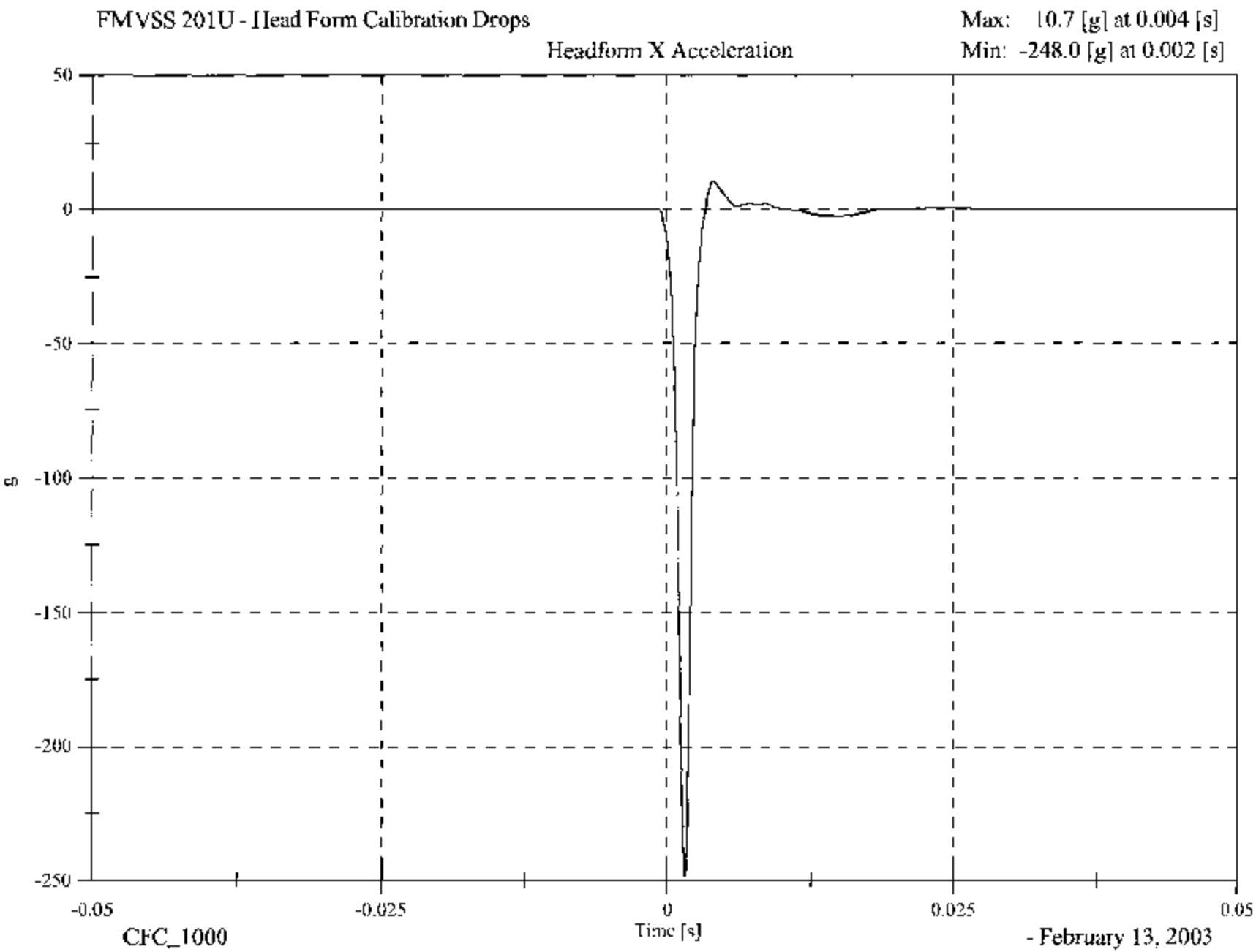
MANUFACTURER:	APPLIED SAFETY TECHNOLOGIES CORPORATION	
SERIAL NUMBER:	1255	
CALIBRATION DATE:	February 13, 2003	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	19°C to 26°C	22
RELATIVE HUMIDITY	10% to 70%	12
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	273.9
PEAK LATERAL ACCELERATION	15 Gs Maximum	4.0
IS ACCELERATION CURVE UNIMODAL?	YES	YES

HEAD ACCELEROMETER CALIBRATION INFORMATION

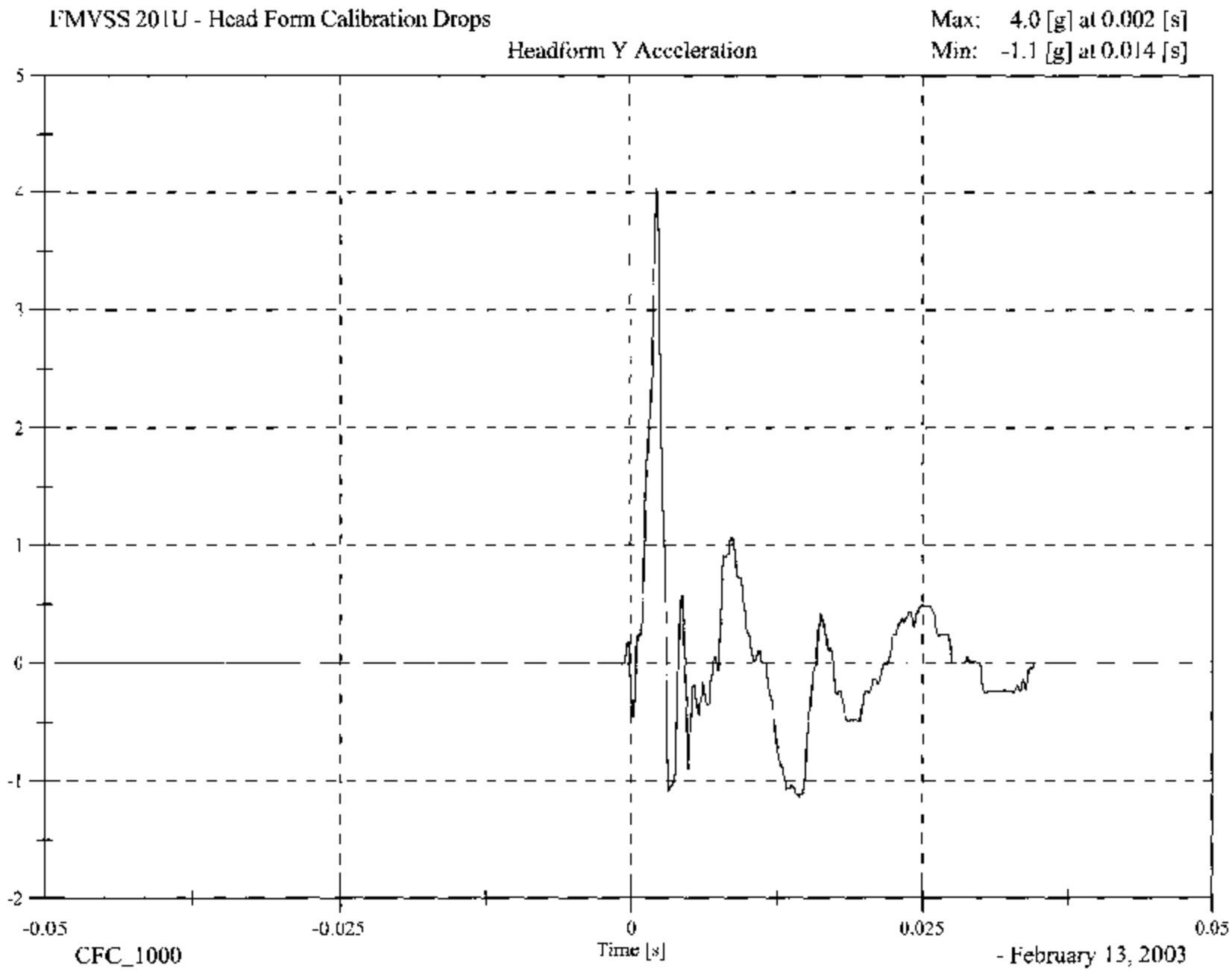
I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J41066	9/02	3/03
2 - LATERAL	ENDEVCO	7264-2000T	J40994	9/02	3/03
3 - VERTICAL	ENDEVCO	7264-2000T	J41087	9/02	3/03

REMARKS:

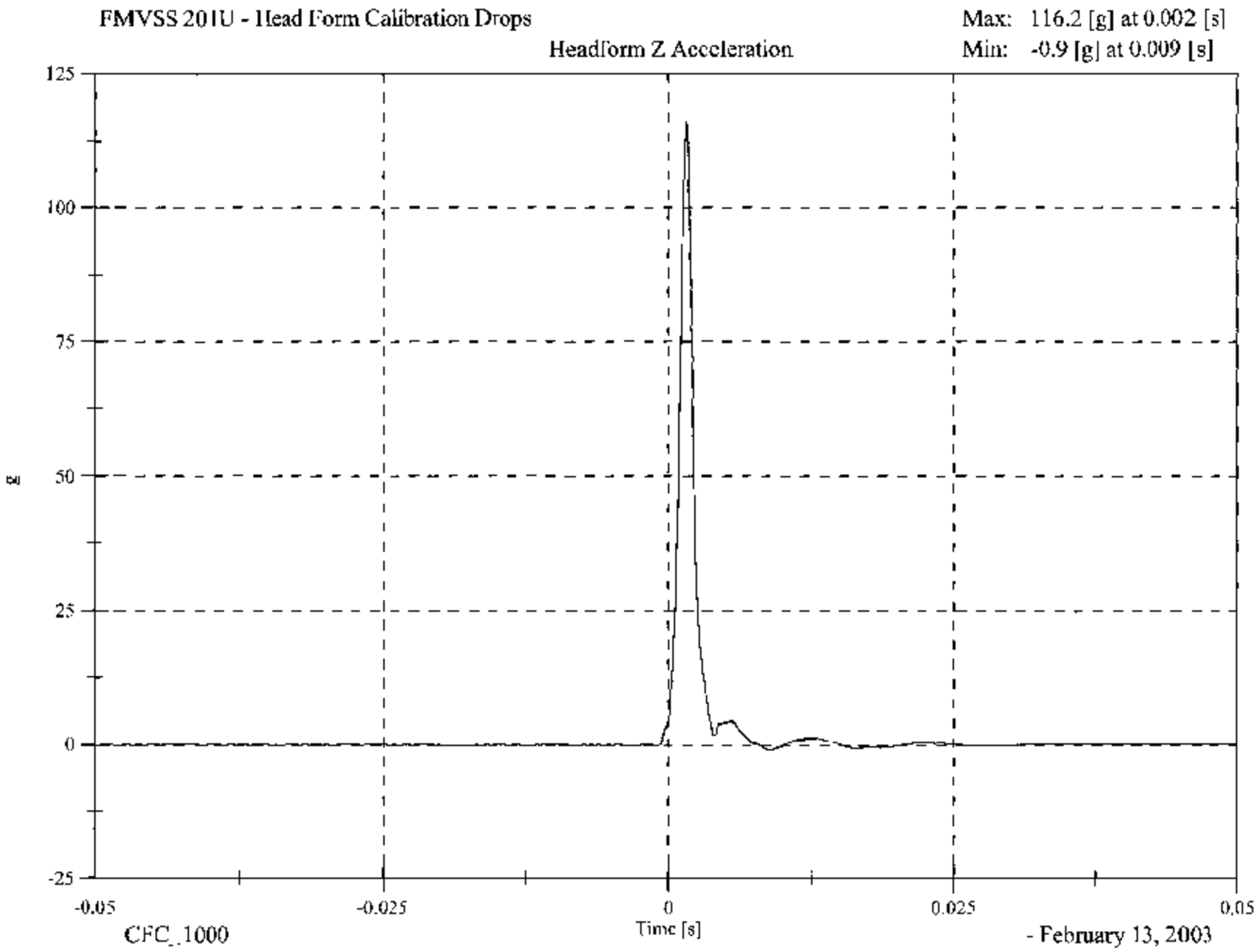
C30303 POST-TEST HEADFORM 1255 IMPACT PLOT #1



C30303 POST-TEST HEADFORM 1255 IMPACT PLOT #2



C30303 POST-TEST HEADFORM 1255 IMPACT PLOT #3



C30303 POST-TEST HEADFORM 1255 IMPACT PLOT #4